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A THEORY OF INTEREST

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A THEORY OF INTEREST

BY

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To

MY MOTHER

PREFACE

THE purpose of this book is not to give a history of the problem of interest or to discuss in detail all the supposed solutions of it, but to try to solve it correctly.

The importance of a correct solution can hardly be overestimated. Millions of men now call themselves party Socialists in countries where that party is committed to the Marxian doctrine of interest, according to which interest is due to the exploitation of wage-earners by capitalists. Millions of men, in other words, on account of the theory of interest they have accepted, regard themselves as robbed by capitalists. By many party Socialists in the United States and elsewhere, indeed, the view is held that the capitalists themselves fully understand *how* the system robs the wage-earners, and sustain universities, whose professors defend it, not, as they pretend, primarily for the advancement of learning, but primarily for the perpetuation of organized injustice. Such is the attitude, I say, of millions of persons at one end of the scale of political opinion. At the other end of the scale are the business men — the "bourgeoisie," in the Marxian terminology — who in fact do not see any injustice in the receipt of interest, and who therefore in turn view the party Socialists as men who would rob them of their just accumulations. Neither group respects or understands the other. And the root of the whole misunderstanding, which breaks out into bitter struggles and dynamite plots today

and which may break out into civil war before long, is a difference in accounting for the surplus called interest. Marx's theory, which is accepted by acclamation by many wage-earners, seems wholly untrue to the few capitalists and the many professional economists who inquire into it. The theories of the professors and the capitalists, on the other hand, are hard to understand, and hopelessly at odds with each other. To the few leaders among the wage-earners who inquire into them, therefore, they are quite unconvincing. So the misunderstanding and the recriminations go on, and the political sky is full of warnings.

All that is needed is light and moral courage. The light must come from those who study the problem of interest deeply and honestly. The courage must be furnished by the leaders of those political groups, in all lands, whose conceptions of interest must be modified in accordance with the light.

Though inclined by my natural sympathies, on undertaking the study of interest, to take sides with the poor rather than with the rich if I could do so with intellectual sincerity, I was concerned, above all things, to discover the truth. And my conclusion is that, provided only a person's capital itself is equitably his own, his title to the interest accruing from it is as good as his title to the earnings of his hands.

Here, of course, the Marxians and the Anarchists among my readers will be inclined to throw the book aside because its conclusion conflicts with their own. To such readers, therefore, I want to address two paragraphs.

You who believe that interest is robbery, who, indeed,

as you would say, *know* that it is robbery, you who are sure that perpetual motion is as impossible in finance as it is in mechanics, do you dare to read this book and then to act honestly according to your convictions? If interest does not involve perpetual motion in finance, and if it is involved in the very make-up of the world, nothing is to be gained by failing to understand the truth about it and to modify your political and economic programs accordingly.

Wage-earners and capitalists can understand each other and work together for the common good, as they cannot do now, just as soon as they agree on the interest problem; and they will agree on that problem, obviously, as soon as they both see the truth. The capitalists are approaching the truth, under the guidance of the professional economists, who in the main are quite honest men. It is to be hoped that the wage-earners will approach the same truth from their side, under the guidance of their leaders, of whom, perhaps, you are one. To understand the interest problem will call for time and thought, but surely they are well bestowed for so great an object. To defend the truth among those who now oppose it will call for moral courage.

Of the professional economists I must ask indulgence for using a terminology containing more new words and meanings than will at first seem to them necessary. My defence is that my whole theory is cast in a fresh mould, and I could not bring myself to be satisfied with expressing it in terms shaped by their associations with theories that will not fit my mind. I venture to hope that I have thrown enough light on the problem to be partly excused for my innovations.

The keystone of economic theory is the conception of value. Without a correct theory of value it was impossible to work out a correct theory of interest, and without a correct theory of interest it was impossible to work out correct theories of price and of distribution. This book makes in the theory of value some modifications that seem to me important.

If my theory is to be called by a brief name, it should be called *the nominal value theory*, for the keystone of it is my conception of nominal value.

The author to whom I owe most is Professor von Böhm-Bawerk, whose *Capital and Interest* and *Positive Theory of Capital* were very helpful to me. The following gentlemen have extended to me various courtesies, and it gives me pleasure to record my obligation to them: Professors Patten and McCrea of the University of Pennsylvania; Clark, Seager, and Mussey of Columbia; Taussig and Carver of Harvard; Barrett and Wilson of Haverford College; Mr. J. A. Hobson of England; Mr. Cyril A. Ward of Lausanne, Switzerland; Mr. Arthur H. Thomas of Haverford, Pa.; and Mr. Charles L. Serrill and Dr. C. W. Macfarlane of Philadelphia. Mr. Ward was very kind in helping me in regard to the algebraic formulæ. Most of all I am indebted to my wife. Without her encouragement and coöperation I could not have written the book at all.

CLARENCE GILBERT HOAG.

HAVERFORD, PA.,
April 15, 1913.

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A THEORY OF INTEREST

CHAPTER I

The Problem

§ 1. The facts of interest have presented a theoretical and a moral problem from time immemorial. Lending at interest was condemned by the Mosaic law [1] as between Israelites; it was declared by Aristotle [2] to be unnatural, was forbidden by the Roman Church until modern times, and is denounced by most Socialists today; yet it persists age after age, and its justification seems to most business men too obvious for discussion. If we turn from moralists and business men to professed economists, we find that although most of them justify interest, they are well-nigh hopelessly disagreed as to the theory of its justification. The most notable recent books on the subject, indeed, such as those of Cassel,[3]

[1] *E.g.* Deut. xxiii. 19, 20: "Thou shalt not lend upon usury to thy brother . . . unto a stranger thou mayest lend upon usury. . . ."

[2] Jowett's translation, as quoted in Macfarlane's *Value and Distribution*, p. 140: "The most hated sort [of money-making], and with the greatest reason, is usury, which makes a gain of money itself, and not from the natural use of it. For money was intended to be used in exchange, but not to increase at interest. And this term usury, which means the birth of money from money, is applied to the breeding of money because the offspring resembles the parent. Wherefore of all modes of making money, this is the most unnatural."

[3] G. Cassel: *The Nature and Necessity of Interest*, Macmillan & Co., London, 1903.

Böhm-Bawerk,[1] Landry,[2] and Fisher,[3] offer theories so different that a faint-hearted inquirer would be tempted to give up the problem in despair.

Confronted by such a variety of opinions, we should be justified in assuming, notwithstanding the views of business men to the contrary, that the facts of interest do present a problem, and that one of the utmost difficulty. Instead of making this assumption forthwith, however, let us analyze the facts briefly in connection with some of the most commonly accepted explanations of them, to convince ourselves at first hand of the difficulty of the problem and to get some idea of its nature.

§ 2. The facts themselves are obvious enough. If you have $100 to spare under any normal circumstances, you can get at least $3 in addition to the original hundred by lending it for a year under conditions that eliminate virtually all risk. Furthermore, if you do not lend the $100, but invest it in machinery, you can normally increase the value of your product for the year enough to cancel the cost of repairing the machinery so that it is as good as new, of insuring against its destruction or its depreciation in value, and of making and overseeing the investment, and to leave you at the end of the year a net surplus of at least $3.

The apparent surplus of $3 that you get in the first case we shall call, with everybody else, *loan interest.*

[1] E. v. Böhm-Bawerk: *Recent Literature on Interest*, Macmillan Co., N.Y., 1903.

[2] Adolphe Landry: *L'Intérêt du Capital*, Giard et Brière, Paris, 1904.

[3] Irving Fisher: *The Nature of Capital and Income*, Macmillan Co., N.Y., 1906; *The Rate of Interest*, Macmillan Co., N.Y., 1907.

The apparent surplus of the same amount that you get in the second case we shall call, for reasons that will appear later, *natural interest*.[1]

§ 3. It is against loan interest that the attacks of moralists have been mainly directed. The reason is evident: in the case of loan interest the fact that the lender gets something of value that costs him no labor is perfectly obvious; whereas in the case of natural interest the apparent surplus — that is, the something of value which costs the recipient no labor — is noticed only when the several items that go to make up the cost, excluding any allowance for interest on the capital employed, but including outgo for repairs, insurance, and oversight, are carefully added up and compared with the receipts from the sale of the finished product. Recently, however, natural interest has been attacked as vigorously as ever loan interest has been, notably by Karl Marx in his work *Das Kapital*, in which it is called "the average rate of profit."

§ 4. That the bulk of the great sums constantly borrowed by business men nowadays are borrowed solely to secure natural interest, so that loan interest and natural interest are most closely connected and rise and fall together, is now realized by nearly everybody who thinks of the subject at all. Intelligent men of affairs, such as bankers and manufacturers, look upon loan interest as simply the price of what we are calling natural interest. A loan yields interest, they say, because it gives the borrower the opportunity to use, for the time covered by the loan, machinery or other things

[1] This definition is modified in § 33.

useful in production to the value of the sum lent. Of course, they add, some borrowers may not take advantage of this opportunity; but that should make no difference in its price: you must pay as much for a loaf of bread you throw away as for one you eat. Loan interest, they conclude, is the price of the opportunity to use labor-saving instruments to the value and for the time covered by the loan; and it is just as fair that that opportunity should be paid for at its market price as that any concrete commodity should be.

Now this is true enough so far as it goes; indeed, it does not differ, practically, from the conclusion I shall sustain; but to suppose, as many men of affairs do, that it leaves no problem of interest unsolved, seems amusingly naïve either to a Marxian Socialist or to an academic economist. The Marxian Socialist asks how it is possible, unless we are to believe in perpetual motion in finance, for natural interest to accrue to the owners of tools of production, admittedly without labor on their part, unless it is produced by somebody else's labor. He challenges such an owner to produce so much as a single pin with no worker to guide the machine. He scorns the notion of perpetual motion in finance, and he knows that "surplus value," as he calls it, is produced by poor devils, down at the bottom somewhere, working. The economist, on the other hand, asks how we are to account for the fact that opportunities to get natural interest remain open age after age; and why natural interest, which seems to be a surplus of value added to the value of the product without extra labor but solely by the "productivity" of additional labor-saving in-

struments, is not reflected back upon the price of those instruments when they are bought? If those instruments can *produce* such surplus value, why do they not *have* it? Why can they be bought, generation after generation, for prices below the sum of the values of their future services?

§ 5. These questions go deep. Whoever fails to see their significance has yet to understand what the interest problem really is. But they do not exhaust the difficulties which the explanation of the man of affairs fails to meet. What is to be said of the income that accrues to the owner of a "durable consumption good," such as a dwelling-house or a pleasure carriage, net above all cost of repairs and oversight, from renting it to others? If that apparent surplus is not also interest, what is it? And if it is interest, is it a mere reflection of the natural interest arising in connection with labor-saving instruments, or does it arise independently?

A little thought will reveal that it is interest and that it would arise even if there were no such things as tools in the world. Whether there were tools or not a stone dwelling would not sell for a price equal to the sum of all its future rents, reckoned net above the cost of repairs and so forth, to the end of time. And if discounting is applied to the values of the future services of the dwelling precisely as to those of the future services of tools, interest must accrue to the owner of the dwelling, as its future services come in, just as to the owner of the tool.

§ 6. What, after all, is the cause of interest in any case but the discounting of future services to begin with? If a man buys the future net rents of a dwelling or of a

pleasure carriage for a price equal to all those future net rents discounted at 5 %, what is the cause of the 5 % interest on that price which he will receive as the years go by but merely the discounting to begin with? Or if he buys a factory building and machines for a price equal to the values of all their future services discounted at 6 %, what is the cause of the 6 % interest on that price which he will receive on selling the finished product as the years go by but merely the discounting to begin with?

§ 7. All these questions are very perplexing to persons who suppose, as most of us not Marxians do suppose until we give special study to the problem, that interest is due to some imagined power on the part of labor-saving instruments to "produce" surplus value. They even suggest, indeed, that so far from interest's being produced by any such power on the part of labor-saving instruments, this supposed power is rather itself caused by interest, so to speak; for they suggest that this supposed power is a mere illusion due to the discounting of the price of the instruments at the beginning: and what is discount but interest itself in another aspect?

At this point another question presents itself. Can it be that the supply of labor-saving instruments and the progress of invention have nothing to do with the rate of interest? That we cannot believe: we are sure, whether we can incorporate it in a consistent theory or not, that there is some causal connection between invention and the rate of interest and between the supply of labor-saving instruments and that rate. We must admit that neither labor-saving instruments nor their undoubted

usefulness can "produce" surplus value, but we cannot give up the conviction that somehow interest is causally bound up with invention and the supply of such instruments.

§ 8. Finally — and this might serve as a challenge to all theories of interest hitherto propounded — no one has quite solved the interest problem who has not fully explained just what it is that men discount when, as we say carelessly, they discount "future goods" or "future services." No one has quite solved the problem, in other words, who has not fully explained the nature of what we call the *principal*. What is the principal? Two lots of goods or services, one of an earlier time and the other of a later — so much is obvious. It is obvious also that the two lots are conceived to be in some sense equal. But in what sense? Whole books are written without giving an answer to this apparently simple, and certainly fundamental, question. Some of the leading economists refer to the two lots as merely "present goods" and "future goods" or as "earlier goods" and "later goods," as if nothing less hopelessly vague were required. We must insist, however, on knowing, and knowing precisely, in what sense the two lots are equal.

Are they, perhaps, equal in "kind and number," as Böhm-Bawerk [1] implies in some passages? No; for

[1] *Positive Theory of Capital*, Macmillan & Co., London, 1891, p. 237: "Present goods are, as a rule, worth more than future goods of like kind and number. This proposition is the kernel and centre of the interest theory which I have to present." P. 248: . . . "present goods, as a rule, have a higher exchange value and price than future goods of like kind and number." These passages are in Book V. In Book VI

if I borrowed a ton of ice of you in July, agreeing to repay you with interest at 6 % per annum in six months, you would be far from satisfied if I repaid you in January with one and three-hundredths tons of ice of the same kind. Such an example, you may say, involves peculiar conditions. Peculiar in degree, perhaps, but certainly not in kind. The only reason why you would not be satisfied with the one and three-hundredths tons of ice in January is that a given amount of ice has — in temperate climates, of course, and under usual circumstances — less value in January than in July; and it is equally true, though in less striking degree, of innumerable other things, that the value[1] of any amount changes with the passing of time.

Are the two lots of goods or services that are to be considered the principal equal in the amount of pleasure — or reduction of pain — that they afford any particular person or group of persons? To adopt this view involves the belief that when you or I or anybody else spends, instead of saving and investing at interest till some future time, the dollar he barely fails to save — the marginal dollar spent, as we might call it — he thereby necessarily sacrifices not a mere surplus of goods or services, but a surplus of pleasure. Can you believe that? I cannot. I have analyzed my motives critically, and

Böhm-Bawerk writes: "In the previous book I tried to show, and account for, the natural difference that exists between the value of present and the value of future goods. I have now to show that this difference of value is the source and origin of all Interest on Capital."

[1] The word "value" I define in § 14 below. Here I use it in its most widely accepted significance, the significance that I give in § 14 to "nominal value."

I do not find that I am usually disposed to sacrifice a greater future pleasure for a less present pleasure; and I find among my acquaintances others who believe themselves equally free from improvidence. We all discount "future goods" in some sense, of course; for example, we all frequently give up $1.02 next year in favor of $1 this year; but that is not to be identified with discounting future pleasure and pain unless it be shown that $1.02 of next year means more pleasure or more relief from pain than $1 of this year. Note that I do not say that nobody discounts future pleasures and pains constantly or that the most provident of us discount them never: I say only that many people do not discount them usually, and that therefore it is hard to believe that the true conception of the principal is two lots of goods or services on which are dependent equal amounts of pleasure or relief from pain on the part of any particular person or group of persons.

Finally, then, are the two lots constituting the principal to be conceived as equal in value? After our examination of the other two conceptions, this one seems more like the truth. Yet it is not without its difficulties. It is, indeed, contrary to a principle generally accepted as fundamental for all economic thinking and expressed as a definition of value by many writers, including J. S. Mill,[1] Walker,[1] Carver,[1] and

[1] T. N. Carver: *The Distribution of Wealth*, Macmillan & Co., N.Y., 1904, p. 2: "In Walker's brief but excellent phrase, 'Value is power in exchange'; and as Mill defines it, the value of a thing is 'its general power of exchanging; the command which its possession gives over purchasable commodities in general.' Either definition expresses the whole meaning of the word value." The quotation from Walker

Davenport.[1] I mean the principle that "value is power in exchange." The lot of today and the lot of ten years hence that would constitute the principal of a loan for that time are obviously very unequal in "power in exchange," for the latter cannot be exchanged for the former unless a good deal of what we call interest is thrown in to boot. We must therefore give up either the idea that the two lots of goods or services constituting the principal are equal in value or the principle that value is always power in exchange; for the two are flatly inconsistent.

§ 9. This short analysis suffices, perhaps, to show that interest does present a difficult problem and that the problem involves a fundamental aspect of the conception of value itself, the heart of all economic theory. Of this problem I shall offer now what seems to me an essentially correct, though doubtless very imperfectly developed, solution.

is from his *Political Economy*, Part I, § 8; that from Mill, from his *Principles of Political Economy*, Book III, Ch. 1, § 2.

[1] H. J. Davenport: *Value and Distribution*, Univ. of Chicago Press, 1908, p. 569. Davenport there defines value as "a ratio of exchange between two goods, quantitatively specified."

CHAPTER II

Some Definitions and Fundamental Conceptions

§ 10. The object of all economic acts is increase of pleasure or decrease of pain. Its opposite is decrease of pleasure or increase of pain. The first group of alternatives I shall call in this book simply *pleasure*, the second group simply *pain*.

Pleasure is dependent primarily on nature, but it is dependent also — and this is what concerns men practically, and therefore what concerns economics — on human *efforts* and on an *interval of time*[1] between these efforts and the enjoyment of the pleasure dependent upon them.

Up to a certain point efforts may be pleasant in themselves. This point is soon reached, however, and beyond it efforts are painful. To work in my orchard half an hour a day in good weather and when my interests do not call me elsewhere may be distinctly pleasant; but to work in it nine hours a day every working day of the year, or even every day when it urgently needs attention, is certainly somewhat painful. By the words pain and painful here I mean to cover not only the positive pain which must begin and increase as efforts

[1] This point about an "interval of time" anticipates part of my theory which I cannot conveniently develop in the present chapter. The point will be duly supported in Chapter IV, § 37.

are continued beyond a certain point, but also the negative pain, as we might call it, involved in the cutting down, by such continuance of efforts, of the time [1] available for positive enjoyments.

Efforts painful in themselves may be the cause of pleasure later. The ninth hour of the day in my orchard is painful in itself, yet it may be the cause of increasing or improving my crop of apples; and the extra size or number or quality of the apples may give me pleasure when I come to eat them or to consume what they bring me in exchange at the market.

At what point, then, will men naturally discontinue their efforts? In so far as men are rational they will discontinue their efforts where their total pleasure dependent on continuing ceases to be greater than their total pain on which continuing is dependent.

§ 11. Efforts painful in themselves on which pleasure depends we call labor. I say "efforts painful in themselves" because we must exclude efforts exerted in sport or play: we must not make the definition too broad. But, on the other hand, we must not make it too narrow: we must not exclude efforts which, though pleasant in

[1] This bearing of time for enjoyment on pain was pointed out by H. H. Gossen in his *Entwickelung der Gesetze des Menschlichen Verkehrs und der daraus fliessenden Regeln für menschliches Handeln*, Brunswick, 1854. It is covered by this theorem of his: "Given the option of several pleasures, and a time so limited as not to suffice for enjoying them all to the point of extinction, we obtain a hedonic maximum by enjoying each pleasure in such measure that its intensity at the moment when the period of fruition expires is equal to that of every other pleasure." This note is based on p. 28 and p. 32 of M. Pantaleoni's *Pure Economics*, translated by T. B. Bruce, Macmillan & Co., London, 1898.

themselves in some cases, are not forthcoming in sufficient quantity to meet the demand unless they are paid for. Examples of efforts of this sort are those of the first hours of the day in the case of many a professional man who enjoys his work. Extending our definition to include such efforts as these, we may put it thus: efforts on which pleasure depends that are painful in themselves or command a market price are called *labor*.

§ 12. In some cases the pleasure dependent on efforts or on the interval of time mentioned in § 10 results directly, that is, without the intervention of any intermediate product. The results in these cases are called *services*. In other cases the pleasure results indirectly, the direct or immediate result being a *good* or *commodity* which in turn furnishes the pleasure itself. As an example of the services of a person take those of a violinist as he plays before an audience. An example of a good or commodity is the violin itself, which stands between the efforts of its maker and the pleasure that comes to the audience. Besides the services of persons we have also, of course, the services of goods: what the violin does towards making the music is its services.

§ 13. We often think of goods or services as being such, that is, as being capable of affording pleasure, by virtue solely of an attribute — due to properties physical, chemical, and the like — inherent in themselves. And this attribute we call their *utility*. Further analysis, however, reveals the fact that pleasure depends quite as much on the person pleased — on whether he exists, for example, and can avail himself of the good or service, and if he can, on his capacity for enjoying — as on the objec-

tive nature of the good or service itself. Utility, indeed, loses all its meaning if the capacity of the person in question for being pleased under the particular circumstances in question is left out of the case. Yet the moment we give this capacity a precise meaning, in respect to the person as well as to the good or service, we can drop the word utility altogether in favor of others [1] that have not been associated so long with a vague, nay, an erroneous, notion. I propose, therefore, to drop the word utility altogether from general use in this book.

The conditions of a pleasure that are satisfied by what is inherent in a good or service, in short by the good or service itself, strictly speaking, may be called the *objective factor of pleasure;* those satisfied by the pleasure receiver, the person pleased, may be called the *subjective factor of pleasure.* There is no pleasure within the scope of economic inquiry that does not result from the cooperation of both these factors.

The separation of these two factors seems to me a most helpful step in economic analysis. Without it the working out of a scientific theory of interest would be, in my opinion, a well-nigh hopeless undertaking. I presume it may have been made by others before now; but if so, I do not know by whom. Possibly I am the first to develop and apply it.

Let me emphasize the distinction between these two factors of pleasure by some simple examples. The pleasure I could get at this moment from a good peach would be greater than that I could get from a poor one.

[1] I mean the word *ophelimity*, proposed by Professor Pareto, and the word *value*, properly modified. See §§ 25–28.

The difference between the pleasures in this case is due to a difference in the objective factors involved, the two peaches. On the other hand the pleasure I could get from a good peach at this moment would be greater than that I could have got from the same peach last week when my appetite was weaker. The difference between the pleasures in this case is due to a difference in the subjective factors involved, the two persons to be pleased, the two capacities for enjoyment. Furthermore, the pleasure I could get from a perfect peach might be greater or less than that some other person could get from the same peach. In this case also the difference would be due to the subjective factors involved.

§ 14. We are now ready to consider what value is. The *value* of anything — good, service, or anything else [1] — is the amount of somebody's pleasure that is dependent on it, expressed as an attribute of the thing.

It is therefore determined by the two factors of pleasure just defined, and those factors may be said to be factors of value as well as factors of pleasure. The value of anything depends, then, not only on what is inherent in it but also on somebody's capacity for getting pleasure from it; and this last depends on the circumstances under which it is available to a person, notably the degree to which he is already supplied with other things satisfying the same sort of want.

This covers, it will be noticed, only the general con-

[1] I say "anything else" here not carelessly but because I want to include something that has value yet is not either a good or, in the ordinary sense of the word, a service. To cover "good, service, or anything else" I use sometimes the word "thing," so modified that its meaning cannot be mistaken.

ception of value: it does not distinguish specific kinds of value. The specific kinds classify themselves readily, however, according to the different subjective factors involved.

Thus there is the *personal value*[1] of a peach, its value to some particular person. This is determined by the attributes inherent in the peach, or by the peach itself — the objective factor — and by the particular person's capacity under the circumstances for enjoying it — the subjective factor.

There is also the *market value*[2] of a peach. This is determined by the same objective factor, the peach, in coöperation with — as subjective factor — the capacity to enjoy the peach, relatively to all other goods and services of the market, of any person having access to the market. Why "relatively to all other goods and services of the market"? and why "of *any* person having access to the market"? Because market value is a purely relative conception. It expresses not the amount of pleasure of a *particular* person that is dependent *absolutely* on the thing, but the amount of pleasure, of *any* person of the market, dependent on the thing *relatively* to that dependent on anything else of the same market. The amount dependent absolutely on a thing, a sack of flour for instance, varies enormously according to whether the person in the case is rich or poor; but the amount dependent on a sack of flour relatively to that dependent on a pound of beef, a violin, or a dancing-master's services[3] — of any specified quality, of course — is the same

[1] This is the "subjective use value" of many writers.

[2] This is the "objective exchange value" of many writers.

[3] This assertion is made on the assumption that at least a little of

for a millionaire as for a day-laborer having access to the same market; for if it were different thus relatively, in other words if the value of a sack of flour relatively to the value of its price, say $1 — which stands for a certain amount also of beef, violins, and dancing lessons of any designated quality — were different to the two men, at least one of them would become a buyer or a seller of flour and a seller or a buyer of the other things until he made relative values to himself correspond with those of the market, as indicated by market prices, and therefore with those to the other man of the two, who might similarly have eliminated, by buying and selling in the market, any temporary discrepancy between relative values to himself and relative values to the market.

Of the other kinds of value which it would be possible to distinguish — according to the various kinds of subjective factor involved — we have need of distinguishing only one more. This is the value that differs from market value only in that its subjective factor, instead of being that of the particular persons constituting a market at a specified time, is that of whatever persons may constitute it at two or more different times. The need of this conception is felt when we want to compare the personal values or the market values of two lots of goods or services of different times. Suppose, for example, we want to compare the value to me of potatoes

every one of the goods and services in question is demanded — at the market price, of course — by both of the two men in question. For the principles applying to goods or services no single unit of which is demanded by some of the persons constituting the market, see P. H. Wicksteed's *Common Sense of Political Economy*, Macmillan, London, 1910, Chapter VI.

this year with the value to me of potatoes next year. The comparison is no sooner mentioned than we want to make the lots of the two times "equal in value," so that "the comparison will mean something." "Are we to suppose," we ask, "that the two lots are equal in value, that is, that each is a dollar's worth, say, and that the dollar itself remains constant between the times?" The answer being in the affirmative, we proceed contentedly to make the comparison until brought to a halt by the puzzling consideration that, from the point of view of the persons constituting the market at the earlier time, the dollar's worth of potatoes of the later time is less valuable than the dollar's worth of the earlier time by just what is called discount. Well, then, we must give up calling the two lots equal in "market value," and we must find out in what sort of value they are equal. And so we are driven to notice that it is to the market of the *time at hand* in each case that the two lots are equal. The market of the later time is that of the "same society," in a sense, just as the American nation of 1900 is the "same nation," in a sense, in 1913, but in another sense it is not the same. Old folk have died; babies have been born; and those living at both times have changed in needs and in resources. The later market is not identical with the earlier one, and to assume it to be so would be blameworthy even if the discount did not stare us in the face. As it is, with the discount before us to measure the considerable difference, in value to any *particular* market, between two lots of goods or services of different times that are equal in value to the market contemporary with each, we are

foolish indeed if we do not follow out to the end the distinction between value to the particular market and value to the *changing market*, as I will call it, to see if it will not help solve the interest problem. This I propose to do; and hereafter I shall call this value to the changing market *nominal value*. Nominal value, then, as I shall use the term, means the value whose objective factor is the same as that of the other sorts of value and whose subjective factor is that of the market of the time of the thing valued, not that of the market of the time of some other thing whose personal or market value is undergoing comparison with it.

§ 15. We come now to the conception of cost. In general the *cost* of anything — good, service, or anything else — is the amount of somebody's pain on which it depends, expressed as an attribute of the thing. It is determined by two factors of pain corresponding to the two factors of pleasure already explained in § 13. The objective factor is simply the thing itself, objectively considered. This factor is obvious enough from the fact that under any given circumstances and for any person it normally requires more pain to make two wheelbarrows than to make one. The subjective factor of cost is the susceptibility of the person in question, under the circumstances, to pain in the thing's production. This factor is evident from a comparison of the pain required of a novice to make a wheelbarrow with that required of a skilful mechanic to make a similar one, or of that required of the mechanic when well with that required of the same man when ill.

The several kinds of cost, *personal cost*, *market cost*,

and *nominal cost*, correspond exactly to personal value, market value, and nominal value, and therefore need not be explained separately.

§ 16. It is evident that according to these definitions anything may be the objective factor both of a value and of the cost with which that value is causally connected. The value to Smith, for example, of ten apples of specified size and quality may be said to be the arithmetical product of the objective factor, which we may call 10, and the subjective factor, which would be a number corresponding with Smith's capacity, under the circumstances, to enjoy the apples. The cost to Smith, on the other hand, of the ten apples would be the arithmetical product of the same objective factor, represented by the number 10, and the subjective factor, which would be Smith's susceptibility to pain, under the circumstances, in producing or otherwise acquiring the apples. The objective factor of value stands, indeed, between a pleasure on the one hand and the pain on which it depends on the other, the connecting causal link between them. If, therefore, we represent the amount of pleasure dependent on a thing and the amount of pain on which it depends, in other words the thing's value and its cost, geometrically instead of arithmetically, that is, by areas of two dimensions instead of by products of two factors, we may let a single line serve for both the thing's objective dimension of value and its objective dimension of cost. This we shall do in § 25.

If, in the case of the ten apples, Smith's subjective factor of value is 3 and his subjective factor of cost is 2,

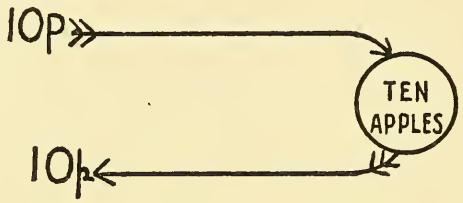
we may represent the value and the cost of the apples to him geometrically thus: —

But it will be remembered that pleasure, in terms of which value is measured, and pain, in terms of which cost is measured, differ only as going up the musical scale differs from going down it. Therefore there is no objection to representing a thing's cost and its value by superimposed areas thus: —

And this latter method is the one we shall adopt, because it reveals at once to the eye any difference there may be between the value of a thing and its cost.

The causal relations, on the one hand between a thing and the amount of pain on which it is dependent, and on the other hand between it and the amount of pleasure dependent upon it, can also be easily represented to the eye. Let 10 P be the amount of pain on which the thing, 10 apples, say, is dependent. Then, if we let the direction from cause to effect be indicated by arrows, the causal relations are shown by the diagram below. At the point where a rational person ceases to produce the thing (see § 10) the amount of his pleasure

dependent on another unit of it would just equal the amount of his pain on which the same unit would depend. Assuming the ten apples in question to be just this "marginal" unit, as it is called, the amount of the pleasure, p, dependent on the ten apples will be 10, and the diagram will be as follows: —



The net result, in terms of pleasure and pain to the person in question, of his producing those ten apples at the margin and then consuming them, is of course zero.

This equality of the value and the cost of a thing to the producer at his margin may also be expressed, and for many purposes more conveniently, by an algebraic equation. Let A and B stand respectively for the objective and the subjective factor of cost to the producer, and A′ and B′ respectively for the objective and the subjective factor of value to the producer. Then at the producer's margin we have the equation,

$$AB = A'B'.$$

Since A is the same as A′, it follows, of course, that B must be the same as B′. Nevertheless we will let all four symbols stand in the equation, to show that all four factors are involved.

§ 17. If two lots of things of the same time are equal in value to any person, the fact may be expressed by a similar equation. In this case A and B stand respec-

tively for the objective and the subjective factor of one lot, and A′ and B′ respectively for the objective and the subjective factor of the other. Then again

$$AB = A'B'.$$

§ 18. Suppose it is the market values of these two contemporary lots, A and A′, that we want to compare. That of A can be expressed by substituting for the personal subjective factor, B, the market's subjective factor, which we may designate B″. This subjective factor of the market cannot be an absolute magnitude, for the reasons explained in § 14: it must be a relative magnitude. Nevertheless it is just as real a magnitude, and it may be treated algebraically just as B may be. So AB″ stands for the market value of the thing A. As for the other thing, A′, its market value is represented similarly by A′ B‴, the symbol B‴ standing for the market's subjective factor in respect to A′.

Now A and A′ had the same value, as we saw, to some person. The question arises whether they have also the same market value. In other words does AB″ equal A′B‴? The answer is, normally, yes. Normally two lots equal in value to a person are equal in value to the market to which that person has access. The reason is not far to seek, and has already been mentioned in § 14: when two lots valued equally in the market are temporarily valued unequally by a person having access to the market, he becomes a buyer of the lot he prefers, or a seller of the other lot, or both, and in so doing tends to make lots equal in value to himself equal in value to the market also. As all other persons having access

to the market tend to do likewise under such circumstances, there can be no equilibrium except when things equal in value to the market are equal also in value to the persons composing the market.

The word "normally" demands explanation. By *normally* I mean, here and everywhere in this book, *on the hypothesis that*, excepting only the cause implied in the fifth paragraph of § 41 and referred to in § 68, *no imperfections of the market or other causes prevent men's acting according to their best economic interests.* The word *normal* I use in a corresponding sense. I may add that for the formulation of the foundation of my theory of interest I shall assume normal conditions, not because they are the conditions of actual life, for that they are not, but because they furnish the best basis for our thinking. Of the divergencies of actual conditions from the normal I shall take due account before bringing this outline of my theory to a close.[1]

§ 19. Going back to our equations of personal value and market value, we must not fail to note that although AB equals A′B′, and AB″ equals A′B‴, it must not be inferred that A′B′ equals A′B‴. Of the relation between A′B′ and A′B‴ we know, indeed, nothing; for whereas A′B′ is an absolute amount of pleasure, A′B‴ is a relative amount of pleasure. The personal values of different things *correspond*, it is true, to their market value; but that is all we know. If a bushel of wheat stands at $1 in the market, and shoes of a certain sort I use at $4, I regulate my consumption of wheat and shoes so that the four bushels of wheat that equal one pair of

[1] See Chapter VI, § 72 and following sections.

shoes in market value equal one pair to me also; and in so doing I affect the market value of both wheat and shoes infinitesimally myself. But to compare the absolute value to me of a pair of shoes with their market value (represented by the price $4), which is not an absolute value at all but a relation between absolute values, is meaningless.

§ 20. I cannot forbear to digress a moment to emphasize the fact, doubtless obvious enough to many of my readers, that some of the great social reforms of this century must take their departure from the principle summarized in the last paragraph. At present there is nothing to prevent the indefinite production of goods and services which the market, indeed, demands, but whose cost to their producers is incomparably greater, absolutely, than their value to their consumers; and on the other hand there is nothing to insure the production of goods and services which, though not, indeed, demanded by the market, would have a value to their consumers far greater than their cost to their producers. This is only another way, of course, of saying that the aggregate happiness is greatly reduced by uneconomical distribution. That distribution is economical, so far as the principle we are now considering is concerned, which unites each objective factor of pleasure, each concrete good or service or other valuable thing, with the greatest possible subjective factor or capacity for enjoyment. I need hardly add that I do not mean to suggest here any specific reform: I mean only to emphasize in its economic aspect a principle that confronts workers for the social welfare at every turn.

§ 21. To return to our definitions and fundamental conceptions, the reader has been struck, no doubt, by my frequent use of the words "depend" and "dependent," my scant use of the words "margin" and "marginal," and my definition of value without recourse to the phrase "marginal utility" at all. Such abandonment of accepted terminology demands explanation.

If I have a barrel of apples and lose two apples, my pleasure is reduced more than if I lost but one. Another way of saying this is that the amount of my pleasure dependent on the two apples is greater than that dependent on one. Moreover my pleasure is reduced more by losing an apple when I have only half a barrel than by losing it when I have a whole barrel. Another way of saying this is that the amount of my pleasure dependent on an apple in the one case is greater than that dependent on it in the other. It is clear from these examples that the phrase "dependent on" covers fully the subjective as well as the objective factor of any pleasure or any pain, and therefore that it may be used to cover both factors when we want to define value and cost. Thus the phrase "marginal utility" becomes unnecessary for the definition of value. And that is most fortunate, for the word utility is so associated in men's minds with the delusion, explained in § 13, that the amount of pleasure dependent on a thing is determined solely by attributes inherent in the thing itself, as to be well-nigh ruined for scientific usage. The very expression "marginal utility" implies that there is such a thing as a non-marginal utility that is distinct from value, whereas in fact there is no such thing: non-marginal

utility means nothing unless the subjective factor be specified; and when the subjective factor is specified, the so-called non-marginal utility becomes simply a non-normal value. This unfortunate implication of "marginal utility" rises up to trouble us when we come to drawing the two curves [1] required to illustrate graphically the theory of normal prices. It leads to the designation of the two curves as that of cost and that of utility. The theory of normal prices is greatly clarified, however, especially the theory of that normal price which we shall find interest to be, by designating the two curves as that of cost and that of value. This will all be made more clear in § 25, where the diagram of normal prices is drawn and explained.

To show that my conception of dependence covers fully the conception usually covered by utility terminology, I venture to quote at length a classic passage from Böhm-Bawerk's *Positive Theory of Capital*.[2] The italics in the passage are Böhm-Bawerk's. The words "depend" and "dependent" I have had printed in capitals.

§ 22. "Turning now to the second question suggested in last chapter we ask, Of several or many wants which one is it that actually DEPENDS on a particular good?

"This question would not be put at all if the circumstances of economic life were so simple that single wants always stood over against single goods. If a good were adapted to satisfy a single concrete want, and if it were

[1] See § 25.

[2] Macmillan & Co., London, 1891. Book III, Chapter IV, pp. 146–149.

at the same time the only one of its kind, or, at least, the only one of its kind available, it would be quite clear without further consideration that the satisfaction of the single want DEPENDED on our command over the single good. But in practical life the matter is scarcely ever so simple as this; on the contrary, it is usually complicated simultaneously from two sides. First, one and the same good is usually adapted to satisfy various concrete wants, which wants again possess various degrees of importance; and, second, several goods of one and the same kind are frequently available, thus leaving it to caprice which good will be used for the satisfaction of an important, and which for an unimportant want. . . . I have been shooting for a few days on the mountains, and by some accident I miss my companions. I am far from any house or village, and the only food I have for myself and my dog is two entirely similar baker's rolls. It is clear that the satisfaction of my hunger is of infinitely more importance to me than the satisfaction of the dog's hunger and it is just as clear that it lies with me which of the two rolls I shall consume and which I shall give to the dog. And now the question arises, Which of the two wants here is DEPENDENT on the bread?

"One is tempted to answer, That want to which the bread was actually devoted. But it is evident at once that this is an erroneous conclusion. It would amount to saying that the two rolls, devoted as they are to the satisfaction of wants of different importance, must possess different values; while it does not admit of question that two similar goods, available under similar conditions, must be entirely equal in value.

"Here, again, an easy casuistical consideration gives the proper solution. The problem is, Which, among several wants, is DEPENDENT on a commodity? This resolves itself very simply when it is known which want it is that would *fail of its satisfaction* if that commodity were not present: that want is evidently the DEPENDENT one. And now it is easy to show that the want which failed of its satisfaction would not be that want which the particular commodity was, accidentally and capriciously, selected to satisfy, but would always be the *least important* among all the wants in question; that is to say, among all those wants which would formerly have been provided for out of the total stock of this class of goods.

"Consideration for one's own convenience, as obvious as it is imperative, induces every reasonable man who acts economically to maintain a certain fixed order in the satisfaction of his wants. No one would be so foolish as to exhaust the resources at his command in satisfying trifling wants, or wants that could be easily ignored, and to deprive himself of the means of satisfying necessary wants. On the contrary, every one would take care to use the resources at his command, in the first instance, to provide for his most important wants; then for wants that come after these in importance; then for those of the third rank; and so on, — always arranging in such a way that the lesser wants were only provided for when all the higher wants had been supplied, and there still remained some means of satisfaction to spare. We act according to the same obvious and reasonable principles when our stock undergoes a change

by the loss of one member of that stock. Naturally this will alter the plan according to which we have been employing our resources. Not all the wants we had arranged to satisfy can now be provided for, and some abatement in the totality of satisfaction is unavoidable. But, of course, the wise man will try to lay the burden on the least sensitive spot; that is to say, if the loss chances to be in a commodity which was destined to a more important use, he will not give up the satisfaction of this more important want, and, by holding on obstinately to his old plan, provide satisfaction for the less important wants. We may be sure that he will satisfy the more important want, and will do so by withdrawing provision from that want, among all the wants hitherto marked out for provision, on the satisfaction of which *least* DEPENDS. To put it in terms of our former illustration: if our sportsman loses the roll which he has meant for himself, he will scarcely feed his dog with the one that remains and expose himself to the danger of starving. He will suddenly change his plan, elevate the roll that remains into fulfilling its more important function only, and shift the loss to the least important function, the feeding of the dog.

"The case, then, stands as follows. Wants which are more important than this 'last' want will not be affected by the loss of the good, for their satisfaction is, as before, guaranteed in case of need by the replacement of substitutes. Nor will those wants be affected which are less important than this 'marginal want,' for they go unsatisfied whether the good is there or not. The only want affected is the last of those that otherwise

would be satisfied: it will be satisfied if the good is there; it will not be satisfied if the good is not there. It is thus the DEPENDENT want we are seeking.

"Here then we have reached the goal of the present inquiry, and may formulate it thus: the value of a good is measured by the importance of that concrete want, or partial want, which is *least urgent* among the wants that are met from the available stock of similar goods. What determines the value of a good, then, is not its greatest utility, not its average utility, but the least utility which it, or one like it, might be reasonably employed in providing under the concrete economical conditions. To save ourselves the repetition of this circumstantial description — which, all the same, had to be somewhat circumstantial to be quite correct — we shall follow Wieser in calling this least utility — the utility that stands on the margin of the economically permissible — the economic Marginal Utility of the good. The law which governs amount of value, then, may be put in the following very simple formula: The value of a good is determined by the amount of its Marginal Utility.

"This proposition is the keystone of our theory of value. But it is more. In my opinion it is the master-key to the action of practical economic men with regard to goods. In the simplest cases, as in all the tangle and complication which our present varied economic life has created, we find men valuing the goods with which they have to deal by the marginal utility of these goods, and dealing with them according to the result of this valuation. And to this extent the doctrine of marginal utility is not only the keystone of the theory of

value, but, as affording the explanation of all economical transactions, it is the keystone of all economical theory."

§ 23. The words "depend" and "dependent," as also such words as "affect," "effect," "result" (as noun or as verb), "product," "produce," and "cause" itself (as noun or as verb), involve the conception of causation, and it is worth while to consider briefly what that conception, by which our thought binds events together according to their simultaneity and succession in nature, should really be.

What, after all, do we mean by causation? What caused, for instance, the death of Julius Cæsar? "The wounds," you may answer, "made by the daggers of the assassins." True; but what if you had adduced, instead, "his own ambition," "his neglect of his friends' warnings," "loss of blood," or any of the many other conditions preceding his death without which he would not have died when he did. Any one of these conditions was as truly a cause of his death, in a sense, as the wounds. And we might extend the list indefinitely: if steel had not continued to cut flesh, for example, Cæsar might not have died from the blows of the assassins. In a sense, then, the very properties of steel were a cause of his death! Enlarging the conception thus, we finally have to say that the cause of any event is the condition and properties of the whole universe the instant before it. But the condition and properties of the universe an instant before the event in question were themselves caused by the condition and properties of the universe an instant before that. And so on *ad infinitum!* Now, philosophically, this broadest conception

of cause has to be taken account of; but for practical purposes it is useless: for practical purposes it must be narrowed until it includes, of all the prerequisite conditions, only those that have practical significance, that is, those that men can affect in their efforts to increase their pleasure. In this restricted meaning of the word cause, the cause of a man's death is the sum of those conditions preceding it that the man or somebody interested in him might conceivably have changed. It is this narrower conception of cause that we must adopt for the present inquiry. When we say that Smith's receiving a certain amount of pleasure "depends on ten apples," we do not mean to deny that the continuance in operation of certain chemical and physiological laws concerned in the matter are necessary also to his receiving the pleasure: we mean to point out the apples as the one prerequisite condition of that pleasure which a practical creature like a man, that is, a creature who undertakes to affect conditions for his own ends, would do well to attend to. And likewise when we say that the ten apples "are dependent on," "are produced by," "are due to," "are the effect of," "result from," "are the product of," or "are caused by" a certain amount of somebody's pain, we mean to designate that pain, not as in any absolute sense the only prerequisite condition of the existence and availability of the apples, but as the prerequisite condition that has practical significance. If we can discover all the practically significant prerequisite conditions of a rate of interest, we may say that we have discovered all the causes of that rate, in the only sense of the word causes that can reasonably be used in economics.

CHAPTER III

Theory of Normal Prices

§ 24. By the *price* of a valuable thing we mean the quantity of some other valuable thing for which it will exchange. Normally, in the sense of that word defined in § 18, the price of a thing would conform exactly to its market value (see § 14) when that market value itself was normal. A price conceived as conforming thus to the thing's normal market value is called a *normal price.*

Though normal conditions may never hold in actual life, so that normal values and normal prices differ from any values and prices of the real world, the theory of normal prices is nevertheless most important for our purpose; for the thing whose price is interest is a thing whose market, though not perfect, is at least exceptionally well organized, and whose price is more like a normal price than most prices are. Besides, any price, even one that diverges far from the normal, can best be understood by first understanding the norm from which it diverges and then the causes of its divergence. I propose, therefore, to proceed now with the theory of normal prices in general.

We may start from the point of view of the individual. To him the production of each unit of the thing beyond a certain point must involve cost. This is inevitable with the definitions of cost and of pain given above in § 15

and § 10 respectively. Beyond a certain point, too, the cost of successive units — our definitions of cost and of pain still holding — must rise; and after it has begun to rise, it must continue to rise indefinitely. This will be found to be true even in the case of a producer exceptionally fond of his work, such as a great pianist: even in his case the point must somewhere be reached — if not after the fifth or sixth hour of playing per day, as would seem likely, certainly before the twenty-fourth — where more playing becomes in itself painful, and from which point on each successive hour's playing must be more painful than the last.

As for the value of the successive units of the thing in question, it must certainly decrease; and eventually, if production is continued indefinitely, the value of another unit must fall quite to zero. If the producer were the great pianist, for instance, the money coming in to him from the seventh hour of playing daily would be applicable only to the purchase of luxuries little cared for, whereas that coming in from the first hour daily would be applicable to the purchase of necessaries and of luxuries really cherished. Increase the income thus *indefinitely* and the value of each unit would fall indefinitely until it reached zero.

§ 25. The last two paragraphs justify us in representing the cost of the successive units of any valuable thing by a curve that soon rises above the base-line and that continues to rise indefinitely; they justify us in representing the value of those units, on the supposition that each unit were marginal, by a curve that falls continually and that would fall to the base-line if continued

indefinitely; and they justify us also in making these two curves intersect. The curves are shown in the diagram below. Along *LI* lay off successive units of the (objective) thing of value in question, in other words successive units of the objective factor of the thing's value. Along *LK* lay off successive units both of the subjective factor of its value and of that of its cost. Then, if the number of units produced by the individual in question is measured by *LD*, and the subjective factor of the cost to him of the last of these units is measured by *DJ*,

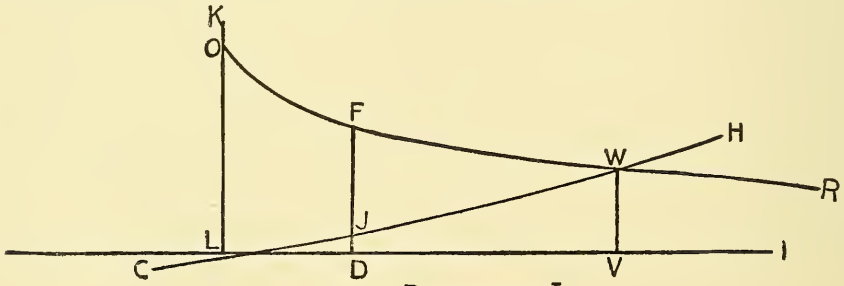


DIAGRAM I

the cost to him of the last infinitesimal unit will be represented by the area of a parallelogram whose length is *DJ* and whose breadth is infinitesimal, and therefore equally well by the mere length of *DJ*. The value, on the other hand, of the same last infinitesimal unit to the producer will be represented, if we suppose its subjective factor to be measured by *DF*, by a parallelogram whose length is *DF* and whose breadth is infinitesimal, and therefore equally well by the mere length of *DF*.

If now we suppose the amount of the thing produced to be increased, the line representing the subjective factor of cost for the last or marginal unit will grow longer

and that representing the subjective factor of value for that same unit will grow shorter. A curve drawn through *J* and the limits of all the rest of these cost lines will therefore take some such form as *CH*; and a curve drawn through *F* and the limits of all the rest of these value lines will take some such form as *OR*. Somewhere the two curves will intersect. If we designate the point of their intersection by *W*, then *WV* measures both the cost and the value to the producer of the last unit produced when the whole number of units is represented by *LV*. Beyond the point *V* the producer will not normally go on producing, because the value to him of an additional unit would be less than its cost to him. Short of the point *V*, on the other hand, he will not normally cease producing, because short of that point the value to him of each additional unit is greater than its cost to him. Thus normally the amount of his production will be measured by *LV*, and normally the cost to him and the value to him of the last or marginal unit will each be measured by *WV*.

Furthermore, the value of any unit before the last to the producer is the same as that of the last. This follows from what is called the principle of substitution, which was explained clearly in the passage about the two rolls quoted from Böhm-Bawerk in § 22. Since the last unit of the thing could at once be substituted for any unit before the last that might be put to a more important use, that is, made to coöperate with a higher subjective factor of pleasure, no more pleasure could be dependent on such a unit before the last than on the last one itself. And this is only another way of saying that no unit before

the last could have more value to the producer than the last one.

Does the same principle of substitution apply to costs also? Does it operate so as to bring the cost of every unit before the last up to that of the last one? Certainly not. Of course not, for, the cost of each unit being less and less as we recede farther and farther from the last one, that is, as we recede from V towards L, and cost being undesired by the person in question, that person has no incentive to substitute the higher cost of the last unit for the lower cost of any of the previous units.

Instead of saying, therefore, that under normal conditions WV represents both the cost to the producer and the value to the producer of the last or marginal unit of the thing, we must say that under those conditions it represents the cost to the producer of the last unit and the value to him of any unit whatever.

To sum up in words, then, the meaning of our diagram, we may say that the value[1] to a person of any unit of any thing falls, under the ideal conditions covered by the word normal, to equality with the cost to him of the last, which is also the most costly, unit of his supply.

From this theory of normal personal value to that of normal market value and normal prices the transition is short. Under normal conditions, as was explained in § 14 (¶ 4) and § 18 (¶ 2), market values must correspond with personal values, and market costs with personal

[1] For a modification of this assertion required by strict accuracy, see § 41 (¶ 5).

costs. As this holds true for any person in the market, for any thing in the market, and for any supply of a thing, it follows that our diagram illustrating the theory of normal personal value will serve also for that of normal market value. Only in the interpretation of the diagram must there be a change: whereas in the personal cost-value diagram distance up from the base-line measures absolutely the subjective factor of cost or of value, respecting a specified increment of a thing, on the part of a particular person, in the market cost-value diagram that dimension measures the subjective factor of cost or of value, respecting a specified increment of a thing, on the part of *any* person whatever and *relatively* to that person's subjective factor of cost or of value in respect to any other thing in the market. Applied to market values and market costs, then, the diagram means that the market value of any unit of any thing falls, under the ideal conditions covered by the word normal, to equality with the market cost of the last, which is also the most costly, unit of the supply.

Having now in the explanation of the diagram a theory of normal market value, we have next to distinguish between that value and normal price. The difference is this: normal market value is an amount of pleasure — "the amount of pleasure dependent [normally] . . . relatively," etc., as explained in § 14 — whereas normal price is a concrete thing — any *thing* in the market that under normal conditions will exchange for the thing priced, or in other words anything in the market having the same normal market value as the thing priced. (I say "any" thing in the market because it cannot be

denied, for instance, that a bushel of potatoes is the price of a circus ticket if it happens to exchange for a circus ticket. Usually, of course, the word price suggests to us money price only; but it must be recognized that, strictly speaking, any sort of valuable thing may be the price of any other.) The normal price of a unit of any thing, then, always corresponds to the normal market value of any unit of the thing and to the normal market cost of the last and most costly unit of it; and the line of our diagram representing this value and this cost, namely *WV*, may be said to represent as well the normal price of a unit of the thing.

§ 26. If we were asked to explain the causes of the normal price of any thing, we could now do so. Those causes must be the conditions of practical significance without which the price would not be what it is. These conditions, in turn, must be those that — to use the convenient terms of the diagram — made the line *WV* as long as it is and no longer. That means that they can be divided into two groups, those on the cost side, which determined the course of *CH* where it is to cross *OR*, and those on the value side, which determined the course of *OR* where it is to cross *CH*. This classification will be found very useful when we undertake to enumerate the causes of the price called interest.

§ 27. When we come to consider, in connection with the causes, on the demand side, of any normal price, the course of *OR* at points other than *W*, we find ourselves obliged to adopt some name for the reality represented by the height above the base-line of *OR* at those points. What, for example, does the height of *OR* at *F*, or in

other words the length of the line *DF*, represent? This question has already been broached in § 13 and § 21, but it requires further discussion. Does *DF* represent utility, as many writers[1] would have it? Certainly not utility in the abstract, for that is not mensurable: if utility at all, certainly utility in conjunction with some specified subjective factor of pleasure, some specified capacity to use. But, then, if what *DF* represents is a utility in conjunction with some specified subjective factor of pleasure, why call it utility at all? That word has been spoiled for the designation of a mensurable attribute, partly by its everyday use in the sense of utility in the abstract. Modified by the word "marginal," it has come in economics, it is true, to mean that mensurable quantity of pleasure, dependent on the thing in question, which is value. Yet how unsuitable it is to play the rôle it is playing in the term "marginal utility" — which has become a sort of new corner-stone of economic theory — is apparent the moment we drop the "marginal" and try to apply the mere word utility that is left to things in the real world that differ from "marginal utility" only in not being marginal. Those things are to "marginal utility" just what all the lines between *OR* and *LI*, and parallel to *WV*, are to *WV* itself: in other words they are represented by the height above *LI* of the various points on the curve *OR*, being mensurable things which the unmodified word utility utterly fails to denote.

[1] See, for example, H. R. Seager's *Introduction to Economics*, Holt, N.Y., 1906, p. 86; C. W. Macfarlane's *Value and Distribution*, Philadelphia, 1900, p. 55; and S. N. Patten's *Theory of Prosperity*, Macmillan, N.Y., 1902, pp. 22–25.

§ 28. Objecting to the designation of the "relation of suitability between a thing and a man by the word utility, Professor Vilfredo Pareto of Lausanne proposed to substitute a word coined from the Greek ὠφέλιμος, namely *ophelimity*. As this word was clearly defined by its coiner at the start in terms of the user as well as of the thing used, that is, in terms of what I call the subjective as well as in those of what I call the objective factor of pleasure, it has never meant anything else than the definite mensurable thing it was coined to mean. I regard it, therefore, as far preferable to the word utility, if one of the two is needed for the theory of value.

But why is either word needed? Why not call the things represented by the lines between *OR* and *LI*, and parallel to *WV*, simply *non-normal values?* Surely there is an advantage in calling them by a name that connects them directly with amounts of pleasure, as the word value, defined as I have defined it, does. Surely, too, there is an advantage in calling them by a name that indicates their logical relations with the costs represented in the diagram by the perpendicular lines up from the same points on *LV* to the lower curve *CH*, as the word value, defined as I have defined it, does. And there is nothing, so far as I can see, to prevent the use of the word value for this purpose: what *DF* represents is a value just as surely as what *DJ* represents is a cost. The former is not, it is true, a normal value, under the conditions covered by the diagram; but neither is the latter a normal cost. The former is the value of any unit of the thing in question when the supply is measured

by *LD*, just as the latter is the cost of the last unit of the thing in question when the supply is measured by *LD*.

§ 29. That the reader may have the case in favor of the use of the word ophelimity fairly presented to him, I quote the following passage from the *Précis d'Economie Politique*[1] of Professor P. Boninsegni, a disciple of Pareto and his associate in the University of Lausanne. I should quote from Pareto's own *Cours d'Economie Politique*[2] if the passage on ophelimity there did not occupy many pages.

"L'utilité[3] ou la valeur d'usage des économistes est

[1] Lausanne, F. Rouge, 1910, pp. 2–4.

[2] Lausanne, F. Rouge, 1896, Vol. I.

[3] The passage may be translated as follows:

"'Utility,' or 'value in use,' as used by economists, may have two different meanings. It may mean

"(α) an objective attribute that things might have as being useful to men;

"(β) a relation of suitability existing between a thing and men.

"Value in use in its first meaning (α) has no sense; in its meaning (β), while approaching the truth, it embraces an imperfect idea and is ambiguous.

"I. It is imperfect: (a) because the utility or value in use of a thing is relative to the individual in question and not to men in general; (b) because it fails to emphasize the fact that the utility or value in use of a thing depends on the quantity of it that the individual in question has consumed or has at his disposal.

"II. The ambiguity is due to the mass of different ideas and feelings that the term *utility* gives rise to on account of the different acceptations it has acquired in ordinary parlance as well as in the technical vocabulary of political economy and the other sciences.

"The same observations may be repeated in respect to the term scarcity.

"To avoid all these ambiguities M. Pareto introduced into the science a new term. He gives the name ophelimity to the relation of suita-

susceptible de deux significations différentes. Elle peut exprimer :

" (α) une propriété objective qu'auraient les choses d'êtres utiles aux hommes ;

" (β) un rapport de convenance qui existe entre une chose et les hommes.

"La valeur d'usage dans sa première signification (α) n'a pas de sens ; dans sa signification (β), tout en se rapprochant de la réalité, elle renferme une idée imparfaite et donne lieu à des équivoques.

"I. Elle est imparfaite : (α) parce que l'utilité

bility that exists between a particular individual and the quantity of a good added to a given quantity of the same good that the individual has already consumed or of which he has the disposal.

"The ophelimity, for an individual X, of a quantity h of a good, added to a quantity a (a being possibly equal to zero) of the same good that the individual has already consumed or of which he has the disposal, is the pleasure which the quantity h gives him.

"Suppose $\Phi(a)$ is the pleasure which is given to X by the consumption or the possession of the quantity a of the good in question, and $\Phi(a+h)$ the pleasure given by the quantity $a + h$ of the same good. Then the ophelimity of the quantity h is

$$\Phi(a+h) - \Phi(a) = \Delta\Phi'(a).$$

" Elementary ophelimity is the quotient arising from dividing by h the pleasure due to the enjoyment of the quantity h, provided, however, that h is very small (infinitely small) :

$$\lim_{h \to 0} \frac{\Delta\Phi(a)}{h} = \Phi'(a).$$

" Elementary ophelimity per unit of price is the quotient arising from dividing the elementary ophelimity by the price.

"If we indicate by p the price of the good of which the elementary ophelimity for X is $\Phi'(a)$, then

$$\frac{1}{p}\Phi'(a)$$

is the ophelimity per unit of price."

ou la valeur d'usage d'une chose est relative à un homme déterminé et non aux hommes en général; (*b*) parce qu'on ne met pas en relief le fait que l'utilité ou la valeur d'usage d'une chose dépend de la quantité que l'individu en a consommée ou dont il a la disposition.

"II. Les équivoques proviennent de la foule d'idées et de sentiments divers que fait naître le terme *utilité* à cause des différentes acceptions qu'il acquiert tant dans le langage ordinaire, qu'en économie politique et en d'autres disciplines.

"Les mêmes observations peuvent être répétées au sujet du terme rareté.

"Pour écarter toutes ces équivoques, M. Pareto a introduit dans la science un nouveau terme. Il appelle ophélimité, le rapport de convenance qui existe entre un individu déterminé et la quantité d'un bien économique ajoutée à une quantité donnée de ce même bien que cet individu a déjà consommée ou dont il a la disposition.

"L'ophélimité, pour un individu X, d'une quantité h d'un bien économique, ajoutée à une quantité a (a pouvant être égale à *zéro*) de ce même bien que cet individu a déjà consommée ou dont il a déjà la disposition, est le plaisir que lui procure la quantité h.

"Soient $\Phi(a)$ le plaisir que procure à X la consommation ou la possession de la quantité a du bien économique en question et $\Phi(a+h)$ le plaisir procuré par la quantité $a+h$ de ce même bien. L'ophélimité de la quantité h est:

$$\Phi(a+h) - \Phi(a) = \triangle \Phi(a).$$

"L'ophélimité élémentaire est le quotient du plaisir provenant de la jouissance de la quantité h par h, pourvu toutefois que h soit très petit (infiniment petit) :

$$\underset{h=0}{\text{limite}} \frac{\Delta \Phi (a)}{h} = \Phi' (a)$$

"L'ophélimité élémentaire pondérée est le quotient de la division de l'ophélimité élémentaire par le prix.

"Indiquons avec p le prix du bien économique dont l'ophélimité élémentaire pour X est $\Phi' (a)$,

$$\frac{1}{p} \Phi' (a)$$

est l'ophélimité pondérée."

CHAPTER IV

Interest as a Price

§ 30. The thing whose price [1] is interest is not a good; nor is it a service in the sense we have given to that word: it is rather the postponement of the consumption of a good or a service. Besides the objective and the subjective factor of value, therefore, which constitute what may be called the two economic dimensions of a good or a service, this postponement whose price is interest has a third dimension, time. Geometrically speaking, therefore, it is a solid, whereas the value of a good or a service is only an area or plane. Furthermore, neither the objective nor the subjective factor of the value of some good or service, which factors constitute two of the three dimensions of the thing whose price is interest, necessarily remains uniform throughout the time that constitutes the third dimension: all that is necessary is that their product remain uniform throughout. In other words the solid that represents the thing geometrically is not necessarily a parallelepiped like Figure I on the next page: it may be such a solid as Figure II.

This will be clear from the consideration of a concrete case. Suppose the good is eight suits of clothes whose

[1] For the correction required to make this assertion accurate in all cases, which would be a useless interruption at this point, see § 33.

total market value corresponds to the price $100. Then we may call the objective factor of their market value 8, and the subjective factor $12\frac{1}{2}$; and we may represent their value geometrically by the rectangle *ABCD* in Figure I. Suppose, now, that the suits are lent by their owner to somebody else with the understanding that the principal of the loan is to be returned, with interest added, at the end of a time measured by *DH*.

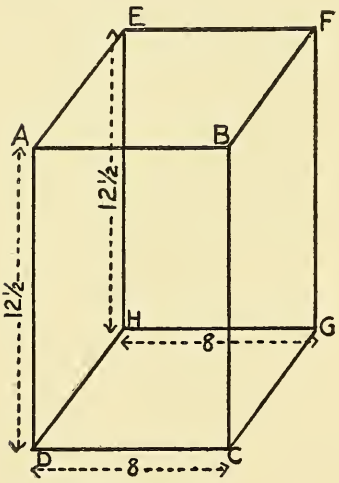


FIGURE I

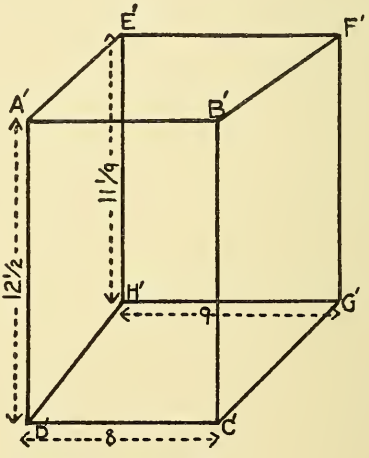


FIGURE II[1]

Then the area of the rectangle *EFGH* represents the value of the principal at the later time, and the whole solid shown in Figure I represents the three-dimensional thing whose price is the interest. But *EFGH* is not the only rectangle that may represent the value of the principal of the later time: any other of the same area may represent it. Usually, indeed, lenders do not insist on the return of the identical goods, the eight

[1] For two notes on this figure, in addition to those in this section, see the third and fourth paragraphs of § 32.

suits, say, that they lend. To do so might, in the case of loans for a considerable time, be disastrous to themselves; for nobody can know that the identical goods will be as valuable next year as they are this year. What lenders want back, as "principal," is goods or services of the later time having the same nominal[1] value (see § 14) as the goods or services lent. So such an area as $E'F'G'H'$ in Figure II, or any other area of 100 units, may represent the value of the principal of the later time. As the chances are overwhelmingly against the later principal's having dimensions precisely the same as those of the principal of the earlier time, I shall always use an irregular solid like that of Figure II rather than a parallelepiped like that of Figure I to represent the thing whose price is interest.

For this three-dimensional thing whose price is interest we need a short name. I propose to call it an *advance*. An advance, then, as we shall use the word, is not to be confused with the goods or services advanced. The latter are things of two dimensions, whereas an advance is a thing of three, the third dimension being time.

§ 31. Advances are of several sorts. I make an advance — whose cross-section, parallel with $A'B'C'D'$ in Figure II, we may call 10 and whose time-dimension we may call 5 — when I lend you ten dollars for five years. That sort of advance is usually called a *loan*. I make an advance also if I rent you a house. This sort of advance is usually called a *rent contract* or a

[1] This sentence may serve temporarily as a definition of the principal. See §§ 34 and 35.

lease. It differs from what we call the loan at interest in providing for the return of the identical good lent: if a certain house is advanced on a lease, it is expected that the very same house, not any other house or other thing of the same nominal value, will be returned at the end of the time stipulated. And as any particular durable good usually declines in nominal value with the passing of time, on account of wear and tear, the good itself at the end of the time is usually not expected to suffice for the principal of the loan, and the difference is charged in money and appears as the excess of the rent charged over what would be interest at the current rate on the market value of the good at the beginning of the time. As investors express it, "If you don't get enough rent from a building to yield you interest at the current rate above taxes, cost of repairs, and everything else that must be written off so as to leave your principal intact, the investment in the building is a bad one."

A third sort of advance I make when I store up goods for future use, as when I store part of my harvest in the cellar for use in the winter, or when I store up my labor in some concrete thing — a table, say, a canoe, a fence-gate — whose services will not repay me for my labor for a considerable time. This sort of advance I make, indeed, even when I merely reserve for its future services a durable good which no person in his senses and under ordinary circumstances would think of treating otherwise but which it would give me more immediate pleasure to consume utterly at once, as when, for instance, I reserve my study-table for its future uses as such instead

of burning it in the fireplace the first time I happen to be cold, out of fuel, and not especially in need of a table for the moment. For making an advance consists simply in giving up an earlier pleasure for a later pleasure (presumably greater). Nowadays, of course, in commercially advanced countries, this third sort of advance is often made by saving money or credit — either of which represents a claim on some of the market's goods or services — rather than by piling up concrete goods or by investing one's own labor directly in a durable good; but, equally of course, saving five dollars and then buying a wheelbarrow with the money is just the same, so far as our inquiry is concerned, as building the wheelbarrow with one's own saved labor.

It is to be noticed that what is really advanced in any case is earlier services for later services. If I lend you ten dollars for five years, I make over to you a claim on the present market's services — those rendered by persons directly, those rendered by persons indirectly through goods, or those (of which the services of favored land sites are examples) rendered by nature or by society but appropriated by persons — up to a market value represented by ten dollars, in exchange for a claim on the services of the market of five years hence to the same nominal value, plus any interest that may be agreed on. If I rent you a house, I give you its services now in return for its services at the end of the time agreed on, plus the "rent." If I store apples in my cellar for winter use I forego their services — the word is odd in such a connection, but there is no harm in using it — in the autumn to have instead their services in the

winter. If I store up some of my labor in a canoe that will not repay me for that labor for a considerable time, I am exchanging the services — of goods or of persons — that I could secure for that labor now for the services of the canoe some of which it will render me only after the lapse of months or years. As what is advanced is thus always, in the last resort, services, it is permissible to speak of it merely as services instead of as "goods or services," as I have done hitherto. It is, indeed, actually preferable to use the single word only, because doing so helps us bear in mind what it is that is in all cases really advanced.

§ 32. Between the first and second sorts of advances on the one hand and the third on the other there is a distinction that we shall find to be of the greatest significance for the theory of interest. Advances of the first and second sorts are from one person to another; those of the third sort from a person to nature. Advances of the first and second sorts only shift the burden of making an advance-to-nature from one person's shoulders to another's, whereas those of the third sort actually lock up in concrete things of the physical world, or in the relations to each other of such things, services that will not for a considerable time be enjoyed to a nominal value equal to that of the labor they cost.

The significance, for the theory of interest, of this difference between advances to persons and advances to nature appears when we undertake to apply to advances the theory of normal prices explained in the preceding chapter. When, for instance, the diagram of § 25 is to be used for advances, just what is it that

is to be laid off along the base-line *LI*? Are advances to persons as well as advances to nature to be laid off on it? The question is very puzzling until we realize that an advance to a person is nothing but the sale to him of an advance to nature. Then it becomes clear that the only stock of advances that corresponds, in the theory of the normal price of advances, to the stock of any sort of goods or services in the theory of the normal price of goods or services, is that of advances to nature; and that advances to persons, being really only sales of advances to nature — or at least of opportunities to make such advances — do not affect the normal price of those advances any more than the sale of a table, once or a dozen times, affects the normal price of tables. Nothing affects the normal price of tables that does not affect the curve *CH* or the curve *OR* as applied to tables; nothing affects the normal price of advances that does not affect the curve *CH* or the curve *OR* as applied to advances; and neither the sale of a table nor the sale of an advance to nature does affect either of these curves, for the reason that, so far as these curves are concerned, such a sale's effect on the buyer and its effect on the seller exactly cancel each other.

It will be evident without detailed explanation that an advance to nature is represented by Figure II of § 30 just as well as an advance to a person is. When that figure represents an advance to nature, the area *A'B'C'D'* represents the nominal value, 100 (corresponding to the price $100), of services *D'C'* which are invested in an advance to nature; and the area *E'F'G'H'* represents the nominal value of the services H'G' of

the later time which constitute the principal of that time.

In this connection I will say that it must be admitted that when a person makes an advance to nature, and often even when he makes an advance to a person, he does not receive back his principal at the later time in one lump, so to speak, as represented by my figures in § 30 and by Diagram III of § 52, but little by little. We are not misled, however, by imagining the existence of a sort of centre of gravity of these returns that constitute the principal, and by treating the point of time of that centre of gravity as equivalent to the point of time at which the principal is returned all together when it is returned thus.

§ 33. The correspondence of the two kinds of advances, those to persons and those to nature, with the two kinds of interest mentioned in § 2, loan interest and natural interest, hardly requires pointing out. But we must be careful how we interpret the correspondence. We may be inclined to jump at once to the conclusion that loan interest is always the price of an advance to a person and natural interest always the price of an advance to nature. But although the former of these conclusions is true always, the latter is true only in some cases. Take the case of a manufacturer: he buys the services of one time, those of a factory building, of laborers and superintendents, of raw materials, and so forth, and he sells the services of a later time, those of the products he manufactures, which later services are the effects of which the earlier services were the causes; and the natural interest that normally accrues to him

from the transaction appears in the concrete form of a difference between the money paid for the earlier services and that received for the later. In his case, therefore, the natural interest accruing might be called a price, the price of the advance to nature in which the investment necessary between the two times is embodied. But in the case of a person who does not both buy the earlier services and sell the later, the natural interest, though it may, indeed, accrue, does not appear in the concrete form of a difference between prices, and therefore need not necessarily be called a price. For example take the case of a man who buys a pleasure carriage at one time and enjoys its services at later times. In his case the natural interest normally accruing may be regarded in either of two aspects: it may be regarded as the difference between the price paid for the earlier services (those invested in the building of the carriage) and that which would have been paid for the later services (those rendered by the carriage) if these latter had been bought apart from the carriage itself and at the times at which they were to be rendered; or it may be regarded as the difference between the pleasure which the price spent on the carriage would have afforded if it had been spent on immediate enjoyment and the pleasure afforded by the carriage on the many later occasions when it is used. Regarded in the former aspect, it is a price; regarded in the latter aspect, it is a value. If now we consider a third kind of case, that of a person quite isolated from the market for services, like Crusoe, we find one in which, though natural interest may accrue, it cannot possibly be calculated in

terms of price, for the reason that there is no such thing as price in Crusoe's world. That natural interest may accrue to Crusoe is demonstrated later in this chapter (§ 51). That in his case it must be reckoned in terms of pleasure and pain only is evident from the mere fact that neither his services nor those of the goods he may make, or may possess without making, are mensurable objectively in terms of prices: they are mensurable only in terms of his own pleasure and pain. — Having thus carefully qualified the statement that natural interest is the price of an advance to nature, I shall allow myself sometimes, hereafter as hitherto, when convenience seems to require it, to speak of interest as if it were always a price.

§ 34. Before undertaking now to apply to advances the theory of normal prices developed in the previous chapter, it will be well for us to review some points of the definition of advances.

An advance is not to be confused, in the first place, with the services advanced or with their value to any person or market: the services are to their value — either their value to any person or their market value — what a line is to an area; and their value is to the advance itself what an area is to a solid. In Figure II of § 30 the line $D'C'$, the line $H'G'$, or any line in the solid parallel with these, represents the services advanced in the case. The plane $A'B'C'D'$, on the other hand, or any plane in the solid parallel to it, represents the nominal value of those services. And finally the whole solid represents the advance itself, the third dimension of the advance, namely time, being represented by the

distance between the plane $A'B'C'D'$ and the plane $E'F'G'H'$.

In the second place, the nature of that subjective factor of value which is part of the definition of the principal must not be lost sight of. In Figure II of § 30 that subjective factor is represented, of course, by $A'D'$ or any other line parallel to it, in other words by the up-and-down dimension of the plane $A'B'C'D'$ or of any other plane parallel to it in the solid. In the case of an advance to a person it is always the subjective factor of nominal value, that is, the subjective factor of value to the market of the "changing society" — existing at the successive moments of a passing time — explained in § 14. In the case of an advance to nature by an advancer who has access to the market for services, it is the same. In the case of an advance to nature by an advancer who does not have access to the market for services, it cannot be the subjective factor of nominal value, because there is no such thing as nominal value in the world of such an isolated advancer: in his case it must be something else, as explained in § 51.

§ 35. For the present we shall confine ourselves to the consideration of advances made by persons having access to a market for services. Of such advances the principal, as explained above, is two lots of services of two separated times but of the same nominal value. The subjective factor of the principal of such advances, in other words, is the need of, or capacity to receive pleasure from, the services in question, on the part of the society that happens to constitute the market at the

moment, relatively to the same society's need of, or capacity to receive pleasure from, any other thing in that market. To lose sight of this point of the definition of those advances to which we shall now apply the theory of normal prices, is to miss the true solution of the interest problem, for this point is the elusive secret of that problem.

Of the two sorts of advances made by persons having access to a market for services, advances to persons and advances to nature, the former are to the latter, as explained in § 32, exactly what the sale of a suit of clothes is to the investment of services in making it. The point is important and may well be explained here again more fully.

Making an advance to a person can no more affect the price of advances than selling a suit of clothes can affect the price of suits, for making an advance to a person is virtually selling that person an advance to nature of the same dimensions. My lending you $100 for a year makes it possible for you to invest your labor to the value of $100 in an advance to nature, for example in making a durable good worth that amount, just one year before you could do so without the loan unless you encroached to that extent on your leisure or on the labor you wanted to devote to other ends. It is therefore simply selling you an advance to nature of the same dimensions. And such a sale cannot affect the price of advances to nature because it neither increases nor decreases the value of the marginal unit of advances to nature. This latter it could not do unless it respectively decreased or increased the supply of advances to nature,

and certainly it does not affect that supply in the smallest degree.

Making an advance to nature, on the other hand, does affect the price of such advances, and through them the price of advances to persons. For making an advance to nature increases the supply of such advances and therefore decreases the value of the marginal unit of that supply.

Making an advance to nature locks up, as it were, in the storehouse of nature's causal nexus, services to a nominal value greater than that of those forthcoming therefrom before the lapse of a considerable time; whereas making an advance to a person does not lock up services at all, but only transfers from the lender to the borrower the title to their disposal — they being measured, for the purpose of the transaction, in terms of nominal value — for the time covered by the loan. Advances to nature might therefore conceivably have, if supplied in inconveniently large amounts, a market cost, which might rise with each further advance so as at some point to balance any value that further advances to nature might have, thus checking the making of further such advances and establishing a normal price of advances to nature, which would be also the normal price of advances to persons. Advances to persons, on the other hand, giving to borrowers, as they do, the disposal of services precisely the same in nominal value as those whose disposal for the same time they take from the lenders, cannot conceivably be affected in cost by their own indefinite increase in amounts. The amount of their supply, therefore, has no significance whatever in respect

to their price. And so we come back again to the assertions made in § 32 that advances to persons are not to be laid off along the base-line, *LI*, of the price diagram, their price being determined by the supply of advances to nature, of which, indeed, as I have said, they may be regarded, unless we find evidence to the contrary, as simply sales.

§ 36. We need not repeat in respect to advances to nature the reasons, given in the fourth paragraph of § 14, the second of § 15, the second of § 18, and the seventh of § 25, why costs and values to a market must correspond to costs and values to any person in touch with that market, and why therefore a diagram representing the costs and the values of advances to nature, on the supposition of the increase of the supply of such advances by successive increments, will serve indifferently for the market in such advances or for any person in touch with it: these reasons hold for the theory of the price of advances to nature precisely as for that of the price of goods or services. We are therefore ready to plan at once the construction of the diagram representing graphically the theory of the normal price of advances to nature. In this planning we must proceed slowly, for if we are to be sure of every step we must halt often for necessary definitions and precautions.

Along a base-line *LI* [1] lay off successive units of the things of value in question, namely the advances to nature existing in connection with the market (for advances to nature) in question. This market we may think of as that of the whole commercial world. Along

[1] See Diagram II, below (§ 41).

LK, perpendicular to *LI*, lay off successive units of both the subjective factor of the value of such advances and the subjective factor of their cost. This is assuming, of course — what has already been assumed several times in the last few pages — that advances to nature may have both a value and a cost. These points must now be fully established.

§ 37. Advances to nature may have a value, both a personal value and a market value.[1] They have a value if locking up in the storehouse of nature's causal nexus services greater in nominal value than those for a considerable time forthcoming from that nexus on that account results, after the lapse of enough time, in the receiving back of services exceeding in nominal value those locked up; for if it results thus, the excess in nominal value of the services received back after "enough time" is the market value of that advance to nature whose time-dimension is the time elapsed and whose cross-section of nominal value (see § 30) is that of the services locked up at the earlier time and also that, less the excess, of the services received back at the later time. And locking services up in the storehouse of nature's causal nexus certainly does often result thus. It does so in the case of the building of any railway that under normal conditions earns, net above all expenses of running it, more than enough to repay its original cost. It does so in the case of the making of any durable good

[1] They may, indeed, have also a nominal value, as will appear from a consideration of two advances to nature separated in time; but the analysis of this point need not now turn us aside from our main argument.

— that is, any good whose immediate services do not pay for its making — whose services eventually sell, under normal conditions, for more than enough to pay all costs of making it and of keeping it in good condition and repair up to that time. It does so, indeed, in the case of the making of anything, or of the affecting of any relation between things, which, though not worth while for its immediate returns, is worth while for its eventual returns — worth-whileness being determined always on a nominal value basis. Was it worth while to build the Brooklyn Bridge? Certainly not for the pleasure each stroke on it could return immediately, before the lapse of any considerable time. The building of it was therefore undoubtedly a locking up of services in the storehouse of nature's causal nexus, whether it was worth while or not. Next, was it worth while on the basis of a gain in nominal value? The answer can be inferred from the fact that if it had not promised to be worth while on that basis, it would have been economically senseless. Nothing that we call a tool, a machine, or a durable consumption good normally renders services that cancel its cost until considerable time has elapsed. It is therefore permissible to say sweepingly that never, under normal conditions, can it be rational to make a tool, a machine, a house, a doll, or any other durable good unless the locking up of services in it promises an eventual surplus of nominal value. Thus that vast aggregate of advantage received by mankind on account of their making and possessing the tools, machines, houses, toys, and other durable goods that they have made, is simply the aggregate of the surplus nominal values due to the

advances to nature embodied in the total supply of such things.

§ 38. It is convenient to have a brief name for goods, including not only namable things but any relations between things, in which advances to nature are locked up. What name is better for them than *natural capital?* By natural capital I mean anything in which an advance to nature is locked up, including notably tools, machines, and durable consumption goods—from carriages to jumping-jacks — but not excluding less discrete and namable things that may embody advances to nature. An example of these latter things is furnished in the case of the advances to nature made by the researches of a scientist. The labors of a Pasteur or a Helmholtz, of an Edison or a Burbank, are certainly advances to nature, except in so far as they may be repaid immediately by the pleasure of the work itself; yet they do not always embody themselves in discrete and namable objects. Other examples are furnished in the cases of the advances to nature made in moving a barrel of apples from Ontario to London — from where it is needed less to where it is needed more — or in developing mutual regard and *esprit de corps* among the employees of a factory with a view to increasing its production without increasing the pain of the employees' labor. In all these cases the services advanced are locked up in the nexus of natural laws even though not embodied in discrete and namable objects; and their embodiments are all to be included under the term natural capital.

In connection with this definition of natural capital one limitation must be made. Not only does the term,

as I use it, exclude things, such as rivers, natural harbors, and the gifts of nature generally, whose valuable services are clearly independent of the previous investment in them of human labor, the previous embodiment in them of advances to nature, but it excludes even such of the embodiments of advances to nature as do not owe those advances to identifiable persons moved by economic motives. It excludes, for example, those groupings of population and of social institutions which result in the great services (of urban land-sites) that we buy at their market price when we pay high urban land-rents. Such groupings are not direct gifts of nature but embodiments of the political and social labors of men, and therefore they constitute what might not unreasonably be regarded as a kind of capital; yet the distinction between them and the capital in which men embody advances to nature with the conscious intention of enjoying both principal and interest later — this distinction, I say, is so important for the light it throws on the justice or injustice of certain social institutions that such groupings had better not be included under the term natural capital. They will be treated further and given a suitable name in § 106 of Chapter VIII.

§ 39. To return now to the main line of our thought, advances to nature may have cost, both personal cost and market cost. This is not denying, of course, that some advances to nature may be made without cost. If your provision, relatively to your wants, is greater this year than it will be next year, you can certainly make some advances to nature without cost. (This corresponds to the principle, in the theory of the

normal price of goods or services, that some persons under some circumstances may be able to raise a few apples or play a few sonatas without cost.) But if, after the making of all the advances to nature thus made without cost, it is found that an additional advance [1] would have value — not value *above cost*, of course, but value simply — economically rational persons are impelled to make the additional advance at any necessary cost to them less in their estimation than the value to them it will have. And so, normally, rational persons will go on making more and more advances at ever increasing cost until they reach the point of normal equilibrium where the value to them of a further advance would not in their estimation exceed its cost to them. Indeed, it is only the (estimated [2]) cost of further advances that can account for the fact that every person in touch with the market fails to make certain further advances that he does fail to make. For every such person certainly ceases making advances before he has advanced the last unit of his income or his vital force; certainly, too, every such person could get at least 2 % interest — that is, surplus nominal value amounting in a year to two hundredths of the nominal value of the principal, and that without appreciable danger of losing the principal — by making the first of the advances he fails to make; and therefore nothing but the (estimated) cost of that first one of his unmade advances can account

[1] Here, as elsewhere, it is important for the reader not to confuse in his mind *an advance* with *the goods or services advanced*.

[2] For the significance of this word see the fifth paragraph of § 41 below.

for any such person's discontinuing to make advances at the point where he does discontinue.

As it is now clear that advances to nature do in some cases have value and do in some cases have cost, we may continue the planning, undertaken in § 36, of our diagram to illustrate the theory of the normal price of advances to nature.

§ 40. Note well just which advances to nature are to be laid off along the base-line, *LI*. They must include all those that actually constitute the world-market's supply, but they must not include any others. They must not include, for example, advances existing previously but not existing at the time in question, which for convenience may be assumed to be the present. This excludes advances once embodied in certain old walls, for example, stone arrow-heads, and what-not, that exist still but can no longer be said to embody advances because they are no longer useful and therefore no longer kept in their old embodiments purposely. They must not include, furthermore, advances conceived as embodied in the natural capital men would invest in if they were perfect in knowledge and skill, or if any conditions were in any way other than they are. This requires a little explanation. Nature offers men, as we have seen, opportunities to lock up services in natural capital whose services in turn, after the lapse of more or less time, will have a nominal value in excess of that of the services locked up. But in their capacity for taking advantage of these opportunities men are restricted by the limitations of the knowledge possessed by scientists, by those of the diffusion of that knowledge among the people

generally, and by those of the industrial skill and the capacity for taking pains, on the part of laborers, requisite for using certain conceivable sorts of natural capital — complicated machines, for instance — to the best advantage. Thus the series of advances to nature laid off along the line *LI*, which is to represent the actual supply at the time in question, lacks nobody knows how many or what advances to nature that are conceivable, and that may sometime through a change of conditions come into existence, but that are not in existence because not understood or because uneconomical under the conditions of the time in question. The series of such advances existing at present (A.D. 1913), for example, lacks those that might conceivably be embodied in certain physically possible but as yet uninvented improvements of the aëroplane, those that might conceivably be embodied in additional specimens of an improvement of the aëroplane already invented but not yet understood by all airmen who could adopt it with advantage if they did understand it, and those that might conceivably be embodied in additional reaping machines, of a model already used to advantage by thousands of farmers, which would have been manufactured if the ignorance, stupidity, or shiftlessness of certain other farmers or their hired laborers had not prevented their being able to use such machines to advantage and their demanding them in the market.

The order in which the advances to nature laid off along *LI* are to be arranged is, of course, that of the market value they would have, under the actual conditions of scientific knowledge, general education, skill, etc., if they were marginal. Next to *L*, in other words, must

stand the advance to nature embodied in whatever natural capital society could least afford, under actual conditions, to be deprived of. Next to that first one must stand the advance to nature embodied in whatever natural capital society could next least afford to be deprived of. And so on through the whole series of existing advances to nature. Very high in the series of the present time must stand some of the advances embodied in iron foundries and steel plants, some of those embodied in printing presses, some of those embodied in the main railway lines, and some of those embodied in well-bred stocks of domestic animals. Lower in the series must stand additional units of advances embodied in natural capital of these same kinds and also the first units of advances embodied in natural capital of less important kinds. Lowest of all in the series must stand advances embodied in that natural capital which under normal conditions men would sacrifice first if they had to sacrifice part of their present supply.

§ 41. When the units of the actual supply of advances to nature are arranged thus along the base-line, the market value of any unit, on the supposition that it is the marginal or last unit of the supply, is represented by the length of a line perpendicular to the base-line from the position of the unit on the base-line to its intersection with such a curve as *OR*.

Now consider how we may represent the cost of the units of advances to nature laid off along *LI*. The unit which, if marginal, would have the highest value, that is, the unit we have placed nearest to *L* on *LI*, would have least cost, or — if we suppose that a few units, between *L*

and *S*, would have no cost at all — would be farthest below the cost line. The unit which, if marginal, would stand second in value, that is, the unit we have placed next nearest to *L* on *LI*, would have the next higher cost or stand next higher towards the line where cost would begin. And so on: when the units of advances are arranged in the order of their descending values — to the advancer or to the market of any specified time — if

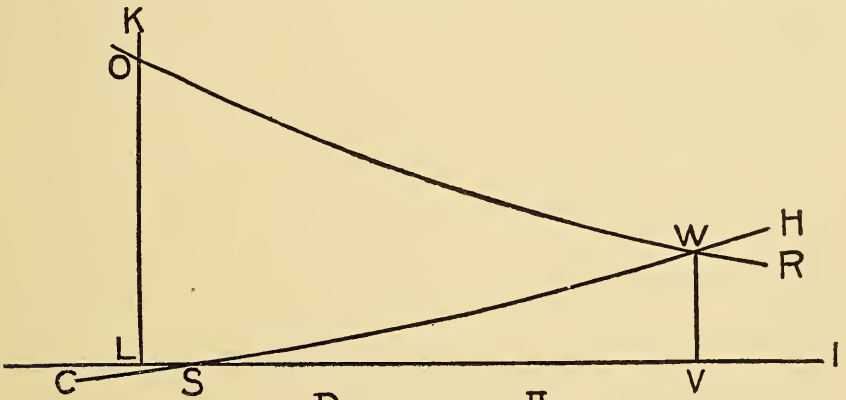


DIAGRAM II

each were marginal, they must be arranged — normal conditions being assumed throughout — in the order of ascending costs. This is confirmed by a moment's reflection. For a man to advance for a year the first dollar of his yearly income, which, of all the dollars he may advance, is the one whose advance will normally be most valuable either to himself or to the market, requires his sacrificing the enjoyment now of those services a dollar will now buy that he is most willing to sacrifice now, in order to have the enjoyment next year of those services a dollar will then buy that he will be most willing to sacrifice then. (The surplus services which the three

or four cents he may receive as interest will buy next year do not concern us in respect to the mere cost of the advance: they concern us only in respect to its value.) For the same man to advance for a year the thousandth dollar of his yearly income, that is, one dollar of a thousand advanced, affects him very differently: the thousandth dollar, which is applicable normally, as we have seen, to a less valuable advance than the first dollar, requires the advancer to sacrifice the enjoyment now of services a dollar will now buy standing a thousand points, so to speak, higher on his list of services arranged according to his preferences, in order to have the enjoyment next year of services a dollar will then buy standing a thousand points lower on his list. Clearly, whatever may be the cost — to any person or group of persons, however rich or however poor — of advancing for any time any specified unit of income, the cost of advancing for the same time the next additional unit must be greater.

The normal market cost, then, of any unit of the existing advances to nature laid off along *LI* is represented by the length of a line, perpendicular to *LI*, from the position of the unit on *LI* up to such a curve as *CH*, which is drawn so as to bound the cost lines of all the units. The costlessness that may characterize some few units nearest to *L* (see § 39) is indicated in the diagram by drawing *CH* below *LI* until it reaches a point, *S*, somewhat to the right of *L*.

In explaining the two curves, *OR* and *CH*, I have spoken only of market value and market cost respectively. I do not mean to imply, however, that the same curves would not represent equally well the boundary of

the lines of the value and the cost of the different units to any particular person. They would do so, for reasons explained in § 14 (¶ 4), § 15 (¶ 2), § 18 (¶ 2), and § 25 (¶ 7), and referred to in the first paragraph of § 36: the whole diagram represents consistently either values and costs from the market's point of view or values and costs from the point of view of any person in touch with the market. The reason why I neglect sometimes the personal point of view is that the goal of this part of our inquiry is an understanding of the normal price of advances to nature, to which price, of course, the market values and the market costs of the units of such advances are more closely related, in our thinking, than are their personal values or their personal costs.

If now we make one slight change in the definition of these curves, we shall be free to complete our diagram for advances to nature as we did that for goods and services, by dropping from the point of intersection of the two curves a perpendicular to *LI* which will represent the normal price of such advances. The two curves of significance to us, those the perpendicular from whose intersection will represent the normal price of advances, are not precisely those we have described, those bounding the lines of value and cost, but those bounding the lines of *estimated value* and *estimated cost*. For of course it is not necessarily where the value to him of advancing another unit *actually* fails to exceed the cost to him of advancing it that any advancer normally [1] ceases making advances: it is where it fails to do so *in his estimation*. The normal value to any person of a unit of advances

[1] See the third paragraph of § 18.

will be determined by the point of intersection of his curves of estimated value and estimated cost instead of by the point of intersection of his curves of value-in-fact and cost-in-fact. This possible error of estimation, by the way, is the one excepted cause, preventing "men's acting according to their best economic interests," to which I referred when defining the word normal in the third paragraph of § 18: in respect to advances I call conditions normal when men are prevented from acting according to their best economic interests by nothing except this error of estimation.

If the curves of our diagram are reinterpreted thus as indicating estimated values and estimated costs instead of actual values and actual costs — to the market, of course, as well as to the person — it becomes correct to say that the height above the base-line of their point of intersection represents the normal market value or the normal price of a unit of advances to nature.

§ 42. "The height above the base-line," I say. Is it, then, inevitable that the intersection of the curves will be above the base-line? Is it inevitable, in other words, that the line *WV*, representing the normal price of a unit of advances to nature, will have positive length? The question is crucial, for the price of advances to nature, per unit, is nothing else, as we shall soon see, than the rate of natural interest. The answer is in the affirmative: *the line* WV *must normally have positive length; the price of advances to nature, per unit, or the rate of natural interest, must normally be above zero.* Evidence of the truth of this, to be interpreted now in accordance with the modification about the error of estimation in the fifth para-

graph of § 41, was given in § 39. It is not conceivable that everybody would cease making advances to nature at a point where, with no appreciable danger of losing the principal, they could still get "2 % interest" by making more advances unless a further advance would have for them positive cost; for certainly services which the "2 % interest" obtainable by making the further advance would buy would have for them positive value.

This evidence for the inevitability of a positive rate of interest is, I say, sound. I do not say, however, that, by itself, it is thoroughly convincing. It will scarcely change the views of readers who felt sure, before reading this book, that a positive rate of interest is by no means inevitable but the result of certain social institutions, legal, political, and industrial. Such readers are sceptical of all evidence that conflicts with their preconceived opinions and will not accept it unless the analysis goes deep enough to show them not only that there is such evidence but why there must be.

§ 43. I propose to carry the analysis deep enough now to convince the most sceptical that a positive rate of interest is inevitable. To do this most conveniently I must represent the factors involved by the symbols of algebra instead of by those of geometry.

Suppose the services advanced are designated *a* and the subjective factor of value, on the part of the market, coöperating with *a* is designated *b*. Then the market value of those services at the time they are advanced is *ab*. In accordance with the definition of the principal that conforms to the conception of it universally held — see ¶ 4 of § 8, § 14, and § 30 — the

principal of the later time must be services equal to ab in nominal value. If, therefore, we designate the services themselves that constitute the principal of the later time as a', and the subjective factor of value of the market of that time as b', the definition of the principal is expressed by the equation

$$ab = a'b'.$$

Now let us make an algebraic equation of the equality of the estimated cost and the estimated value, to any advancer at the margin of his advancing, of an additional increment of advances to nature. (That this equality must exist at the margin of any advancer is clear from the sixth sentence of § 39 and the fifth and sixth of the second paragraph of § 25.) If we represent his subjective factor of value at the earlier time by b'' and his subjective factor of value at the later time by b''', the estimated cost to him of the supposed additional advance must be any difference there may be between ab'' and $a'b'''$; that is, it must be $ab'' - a'b'''$. As for the estimated value of the advance to him, that we can express by the product of b''', his subjective factor of value at the later time, and a symbol, say a'', representing the objective factor of that value, that is, the concrete services he may conceivably receive, over and above those constituting the principal, on account of having made the advance to nature in question. Then the equality of the estimated cost and the estimated value of an additional advance, to any advancer at his margin, is expressed by the equation,

$$ab'' - a'b''' = a''b'''.$$

Take now the fact, proved true but unaccounted for in § 39 and § 42, that both the estimated cost and the estimated value, to any advancer, of an advance at his margin must be positive. That fact may be expressed algebraically thus:

$$ab'' - a'b''' >^{*} 0$$

or

$$a''b''' > 0.$$

We now have before us in convenient algebraic form the data necessary really to solve the problem of interest. The data consist of the three principles:

(1) $ab = a'b'$

(2) $ab'' - a'b''' = a''b'''$

(3) $a''b'''$(or $ab'' - a'b'''$) > 0.

From these propositions we may derive a fourth, namely,

(4) $\frac{b''}{b'''} > \frac{b}{b'}$.

§ 44. In the meaning of these four propositions are to be discovered the reasons *why* $a''b'''$ must be greater than zero, the reasons *why* interest persists age after age, and also the causes that determine the normal rate of interest. Let us consider the four principles, one at a time.

The first is merely the algebraic expression of the definition I gave to the "principal" of an advance. But remember that that definition was not arbitrary: it conformed

* For the benefit of readers not familiar with the signs used in algebra I will say that this sign means *is greater than*. The whole expression means, then, simply that the excess of ab'' over $a'\ b'''$ is greater than 0.

to the conception which every reader will admit, I think, that he himself holds. And it is profoundly significant for the theory of interest. For it is not too much to say that if men conceived the services of different times that are to be regarded as the unit of an advance, that is, if they conceived the principal, in terms of equality to the advancer instead of in terms of equality to the market of the passing time, that is, if they conceived it in terms of equality in value to the advancer instead of in terms of equality in nominal value, the phenomenon we know as interest would not appear at all. The services of the later time that are equal to the services a in estimated value to the advancer are the services $a' + a''$. Suppose, then, that $a' + a''$ were regarded as the principal of the later time. In that case no surplus services called interest would have to be thrown in to boot with those in that case regarded as the principal of the later time, to establish that equality between the cost and the value of the advance to the advancer which must normally exist at the margin of any advancer; and indeed not so much as the conception of the surplus called interest would ever enter anybody's mind. Now adopt again that conception of the principal which is actually held by men, that of services constant in nominal value, that is, constant in value to the market of the kaleidoscopic society that changes with each moment of the passing time. Once that conception of the principal is held again, the surplus again emerges; for with that conception, as we have seen, though for reasons not quite yet explained, $a''b'''$ must be greater than zero, — which means that the advancer must receive certain services,

a'', over and above the services a' that constitute the principal of the later time.

The second of our four propositions is bound up with the first one by being expressed in terms whose mathematical values are determined by the first one. In other words the a and a' of the second proposition stand for two lots of services which happen to be equal in nominal value, according to the equation $ab = a'b'$; and the a'' of the second proposition stands for a lot of services that has to be added to the lot a' to make a lot, $a' + a''$, equal, in estimated value to the advancer at his margin of advancing, to the lot a.

The third proposition, which is also expressed in terms of a, a', and a'', is based partly on the second proposition and partly on the first paragraph of § 42. It expresses the fact that at the margin of advancing of any advancer, an advance, defined as to principal as it always is, must have positive value to him and positive cost to him.

The fourth proposition was derived, as I have said, from the other three. I now ask the reader's attention to its meaning. It is to be recalled that b''' stands for the estimated subjective factor of value of the advancer in connection with services of the later time, that b'' stands for his subjective factor of value in connection with services of the earlier time, that b' stands for the changing society's or market's estimated subjective factor in connection with services of the later time, and that b stands for the changing society's or market's subjective factor in connection with services of the earlier time. Expressed in language, then, the fourth proposition means that *with the passing of time the subjective factor*

of any advancer must in his estimation decline relatively to that of the changing society.

§ 45. This proposition, which we have derived by algebraic processes from three others that were themselves based on somewhat extended argument, can fortunately be confirmed directly by common sense. The b'' and b''' of the fourth proposition stand, remember, for the advancer's present subjective factor and estimated future subjective factor respectively, and the b and the b' for the changing society's present subjective factor and estimated future subjective factor respectively. The meaning, then — to repeat the point — of the proposition expressed algebraically by the inequality $\frac{b''}{b'''} > \frac{b}{b'}$ must be that with the passing of time the subjective factor of any advancer must in his estimation decline relatively to that of the changing society. Well, then, the question now before us is whether that can be shown to be true by evidence wholly independent of the reasoning by which we arrived at the algebraic expression of it? It can. It must be true if causes exist that would be sure to produce it as their effect. And such causes do exist. What would such causes be? Obviously any conditions that would generally be expected to affect the advancer's subjective factor with the passing of time, in the direction of reducing it, without affecting the changing society's subjective factor in the same way to the same extent. Now at last we are driving our quarry to its last hiding place: we see now that if there are conditions that may be expected to make the advancer's subjective factor of value decline with the passing of time,

relatively to that of the changing society, those conditions may account for the fact that $\frac{b''}{b'''}$ is greater than $\frac{b}{b'}$ and therefore for the persistence of the nominal surplus a'' as a positive quantity of services. Are there, then, such conditions? Yes, there are: aside from the conditions connected with the passing of time that may affect both the advancer's subjective factor and the changing society's equally, there are some involved in the advancer's aging and death that affect the advancer's subjective factor, in the direction of reducing it, without affecting the changing society's at all. Is not the changing society expected to live on indefinitely? And is not the advancer — whether one person, or a hundred, or all the persons of a specified time's market — expected to grow old and die?

This explanation may be defended under two headings.

First, the certainty of the advancer's own death within a few decades — whether the advancer be a person, a married couple, or any other group of individuals — and the *chance* of his death within any period, however short, makes $\frac{b'''}{b''}$ less, quite apart from any error of estimate, than $\frac{b'}{b}$. For it lowers b''' relatively to b'' without correspondingly lowering b' relatively to b. It lowers b''' relatively to b'' because death removes altogether the advancer's own subjective factor for the later time and does not supplant it with any subjective factor virtually his own of equal magnitude. By "subjective factor virtually his own" I mean that of heirs he may

have whose pleasure he may regard, at the time of the proposed advance in question, as in a sense his own. Not every person, of course, has heirs for whom he has such feelings. And even in the case of those who do have them, the heirs' subjective factor equals that of the advancer in magnitude only for services advanced for the benefit of the heirs *up to a certain point*, namely the point where another unit of services advanced would mean less pleasure to the heirs at the later time than services objectively the same would mean to the advancer at the earlier time. How soon that point must be reached is realized when we consider that each new generation has fresh powers of production and of acquisition as well as fresh wants.

Take, for example, the healthy, nearly grown, and fairly well educated children of an artisan whose income, derived from his labor only, is fifteen dollars a week. Even in the case of the fifteenth dollar per week, the subjective factor of such children several years hence is probably lower than that of the artisan and his wife themselves now. It is, indeed, only in the case of heirs very young at the later time in question and parents well off at the earlier time in question that the future subjective factor of the heirs, even supposing the pleasure of the heirs to be regarded by the parents as virtually their own, can reasonably be reckoned by the parents as fully supplanting their own present subjective factor in connection with any services they think of advancing.

In passing I will draw attention to the fact that this weighing of the subjective factor of heirs against that of the advancer involves the comparison of absolute amounts

of pleasure, which, as explained in § 19, cannot be measured exactly.

Secondly, the error of estimation will not be denied, in the case of most advancers, to increase the difference, for any period of time, between $\frac{b'''}{b''}$ and $\frac{b'}{b}$. On this point I will not enlarge here: it is familiar to all students of economics and is discussed in §§ 68 and 79.

We have seen that the bearing on the three previous propositions of the fourth, whose truth is thus confirmed by common sense directly, is that of an equation derived from those three by the processes of algebra. But consider what must be its true logical relation to those three. Though formulated by us later than the third proposition, the fourth is really the expression of the conditions that are the causes — in coöperation, of course, with the conditions expressed by the first equation and the second — of the results covered by the third. It is *because* the subjective factor of any advancer must decline, with the passing of time, relatively to that of the changing society, that the margin of any advancer, the point where a further advance seems to offer him no advantage on the whole, is reached while $a''b'''$ (as also $ab'' - a'b'''$) is still greater than zero. All the factors and relations involved in the interest problem are therefore covered by the three propositions

$$(1) \qquad ab = a'b'$$

$$(2) \quad ab'' - a'b''' = a''b'''$$

$$(4) \quad \frac{b''}{b'''} > \frac{b}{b'}.$$

As proposition (3) of § 43 adds nothing to these three, it may, for most purposes of our analysis, be dropped from the list.

§ 46. The elusive secrets of the interest problem, though expressible so simply in algebraic terms, and though expressible clearly also, as I shall show in Chapter V, in geometrical terms, are hard to express either simply or clearly in language. To the expression of so many factors and relations language is comparatively ill adapted. I must try, however, to explain the enigma of interest in language as well as in the other media.

§ 47. *Natural interest is the price of an advance to nature* (in the case of an isolated advancer, a Crusoe, not the price but *services equal to the advance in value to the Crusoe* — see the third paragraph of § 34 and § 51), in other words *the services of the later time for which the advance will exchange, the kind and quantity of these services being measured in terms of nominal value and the advance itself being defined as the exchange of services of the earlier time for those of the later time to the same nominal value.* Natural interest is usually measured in terms of a rate or ratio, whose denominator is the nominal value of either of the two lots of services whose exchange constitutes the advance to nature and either of which is called the principal, and whose numerator is the nominal value, or value to the later time's market, of the services of the later time for which the advance to nature [1] will exchange. What puzzles people who reflect about in-

[1] Here again it is perhaps necessary to caution the reader that an "advance to nature" is not to be confused with the services advanced.

terest is why an advance to nature should persist in commanding any price at all above zero. "With everything except advances," people say, "the price corresponds to the value to the producer; and that falls, under normal conditions, to equality with the cost to the producer. Why should not the same hold true of the price of advances to nature? And if it does hold true of them, why should not the price of such advances fall to zero, an advance being nothing but the exchange of services of one time for services of a later time to the same value?"

We are now in a position to see how this difficulty arises. An advance to nature is, indeed, "nothing but the exchange of services of one time for services of a later time to the same value." But to the same value *to whom?* It is only when we ask that question, answer it right, and analyze all that the answer involves, that we are in the way of solving the problem. The services of the later time are of the same value as those of the earlier time *to the kaleidoscopic procession we call the changing society.* The definition of the principal on this basis has been defended in §§ 14, 30, and 34 (¶ 3); now we must analyze its significance. It fixes at once the services of the later time (the services a') which are to be considered the later principal as services having a nominal value equal to $\frac{ab}{b'}$, and therefore as objectively less, that is, less in quantity or of a kind standing lower in the series explained in § 40 (¶ 2), than those services of the later time that are equal to the services advanced in estimated value to the advancer at his margin. Why?

Because it fixes a' as equal to a multiplied by $\frac{b}{b'}$, whereas the services of the later time that are equal to the services advanced in estimated value to the advancer at his margin must be a multiplied by $\frac{b''}{b'''}$, a ratio that we know to be larger than $\frac{b}{b'}$ according to the fourth proposition of § 43. The effect of this is to make an advance, defined as it is in respect to principal, cost any advancer, at his margin and in his estimation, just the difference between the estimated value to him of the later services a' and the estimated value to him of the objectively greater lot of services necessary to be equal to the services a in estimated value to him. So an advance, defined as it is, does have an estimated cost above zero to any advancer at his margin; and any advancer will cease making advances at the point where this estimated cost to him of an advance as thus defined equals the estimated value to him of an advance as thus defined, in other words where he can get in exchange for the services a of the earlier time not only services of the later time of the kind and amount a' but also additional services of that time, a'', of such kind and amount as to make $(a' + a'')b'''$ equal to ab'' or — what is the same thing — to make $a''b'''$ equal to $ab'' - a'b'''$. And so, since the advancer is the only possible producer or supplier of advances to nature, his cessation of advancing at that point must make the lot of later services, a'', which is additional to the lot a' and therefore called a surplus in spite of the fact that it is not a surplus at all from the

point of view of the advancer at his margin, persist age after age as a positive quantity of services. Finally, so long as the objective surplus services a'' persist, so long their (estimated) value to the society of their time, $a''b'$, by which men measure the price of the advance, which is interest, must persist as a positive quantity; and so long the ratio of $a''b'$ to the nominal value (ab or $a'b'$) of the principal (a and a') must persist as a positive quantity. And that ratio, $\frac{a''b'}{ab}$, as was explained in the second paragraph of this section, is the rate of interest.

§ 48. Since a' and a'' are determined, relatively to a, by the subjective factors, b, b', b'', and b''', it is possible to deduce from the three propositions of § 45 formulæ for the amount of natural interest and the rate of natural interest that contain only one objective factor. These formulæ are derived from the three propositions of § 45, of course, by the ordinary processes of elementary algebra. They are as follows: —

$a''b'$, the measure in terms of nominal value of the *interest*, must always be $ab\left(\frac{b'b''}{bb'''}-1\right)$

$\frac{a''b'}{ab}$, the *rate of interest*, must always be $\frac{b'b''}{bb'''}-1$.

And from these two propositions it follows that when ab is 100, as it is in the case of an advance to nature such as would be represented by Figure II of § 30, the concrete interest, which would then be $100\left(\frac{b'b''}{bb'''}-1\right)$, must be also the rate of interest per cent. In other words the

rate of interest per cent[1] must be

$$100\left(\frac{b'b''}{bb'''}-1\right).$$

§ 49. *Discount* is merely interest from a different point of view. When we speak from the point of view of the principal of an advance — for instance from that, in our example, of the 8 suits in 1912, the 9 suits in 1913, or the $100 at either time — we use the word interest: "A loan," we say, "of $1000 should now yield $50 a year interest." When, on the other hand, we speak from the point of view of the principal plus the interest — both of the later time in question — we use the word discount: "$1000 due a year hence," we say, "can be bought at a discount now for $952.38⁺." In this latter case the principal of the advance in question is $952.38⁺, and the interest on that principal is $47.619⁺. What we have in mind, however, in this case, is not the principal but the principal plus the interest, both of the later time, that is, the $1000 of next year that is to be "discounted."

In terms of the case represented by Diagram III of § 52, the interest was $\frac{27}{100}$ of a suit of clothes (see ¶ 2 of § 30), or $\frac{3}{100}$ of the principal of the later time, or $\frac{3}{100}$ of $100, or $3.[2] The conditions of the market for ad-

[1] By "rate of interest per cent" I mean the "6" of the expression "6%," the "4" of the expression "4%," etc. In the case considered, then, $100\left(\frac{b'b''}{bb'''}-1\right)$ is 3, *not* $\frac{3}{100}$ or 3%.

[2] This may puzzle the reader if he forgets that each suit is worth at the later time, according to our supposition, $11\frac{1}{9}$. — If one suit is worth $11\frac{1}{9}$, then $\frac{27}{100}$ of a suit is worth $3.

vances remaining the same, the discount on the $9\frac{27}{100}$ suits of 1913 (equivalent to \$103), to be delivered in 1913 but to be paid for in 1912, would be $\frac{27}{100}$ of a suit in 1913 (equivalent to \$3), the principal advanced in that case being 8 suits in 1912 and 9 suits in 1913 (either lot equivalent to \$100); and the discount on 9 suits in 1913 (equivalent to \$100), to be delivered in 1913 but to be paid for in 1912, would be $\frac{27}{103}$ of a suit in 1913 (equivalent to $\$2\frac{94}{103}$), the principal advanced in that case being a trifle more than $7\frac{76}{100}$ suits in 1912 and a trifle more than $8\frac{73}{100}$ suits in 1913 (equivalent to $\$97\frac{9}{103}$).

§ 50. The first formula for interest in § 48 (namely, interest $= ab\left(\frac{b'b''}{bb'''} - 1\right)$ will serve equally well for discount, of course; but in applying it one must not forget that the symbol a in it means the services of the earlier time which are the principal of the loan, and that it does not mean the services of the later time, principal and interest together, which are being "discounted." As for the second and third formulæ of § 48, namely that for the rate of interest and that for the rate of interest per cent, they also would serve for discount too if the rate of discount were defined as the ratio of the nominal value of the discount to that of the principal, not as the ratio of the nominal value of the discount to that of the services discounted, which comprise principal and interest together. As the conception of a rate of discount, however, is not common or clearly defined among men of business, it is not worth while for us to concern ourselves with it further.

§ 51. We have now to take account of the case (referred to in § 34) of an advance to nature made — if such a thing is conceivable — by a person like Crusoe who has no access to any market for services. Such a person cannot make an advance to nature of services defined as to principal in terms of nominal value, for the obvious reason that the services of his world have no nominal value at all, that is, no value to the "changing market of the passing time." And yet advances to nature are certainly possible to such a person, and rational too; for what but such an advance would be the quite rational building of a hut, at a cost in labor much greater than would be cancelled by the value of its services until a considerable time had elapsed, provided only its services promised to outweigh its cost eventually? How, then, are we to define the principal of such an advance in Crusoe's case?

When Crusoe considers the question of undergoing painful labor for the sake of pleasure to follow immediately, he is guided to his decision by the same simple principle that guides a man in touch with a market, the principle explained in the fifth paragraph of § 10 and in § 16. And when he considers the question of undergoing painful labor for the sake of pleasure to follow considerably later, he is guided to his decision, again, by the same comparison — that is, of the pleasure dependent on the labor with the pain on which the labor depends — which guides a man in society. But whereas the man in society considers to be principal, as distinguished from "surplus" or "interest," so much, of the services of the later time that he is to get in exchange for those of the earlier time,

as are equal to those of the earlier time in nominal value, a Crusoe does not find any part of the later services marked off thus from the rest as principal. For in his world there is no such equation as $ab = a'b'$ (see the second paragraph of § 43); and for him the equation $ab'' - a'b''' = a''b'''$ of the world of the market becomes $ab'' - ab''' = a''b'''$. As b and b' do not exist in his world, the services of the later time in his world that correspond to the services a' in the world of the market, that is, the services that constitute the principal of the later time, are services equal to the services a, when contemporary with a, in value to Crusoe himself; and the formula for the rate of interest with Crusoe becomes $\frac{b''}{b'''} - 1$ instead of $\frac{b'b''}{bb'''} - 1$.

CHAPTER V

Relations of the Interest Problem Represented Geometrically

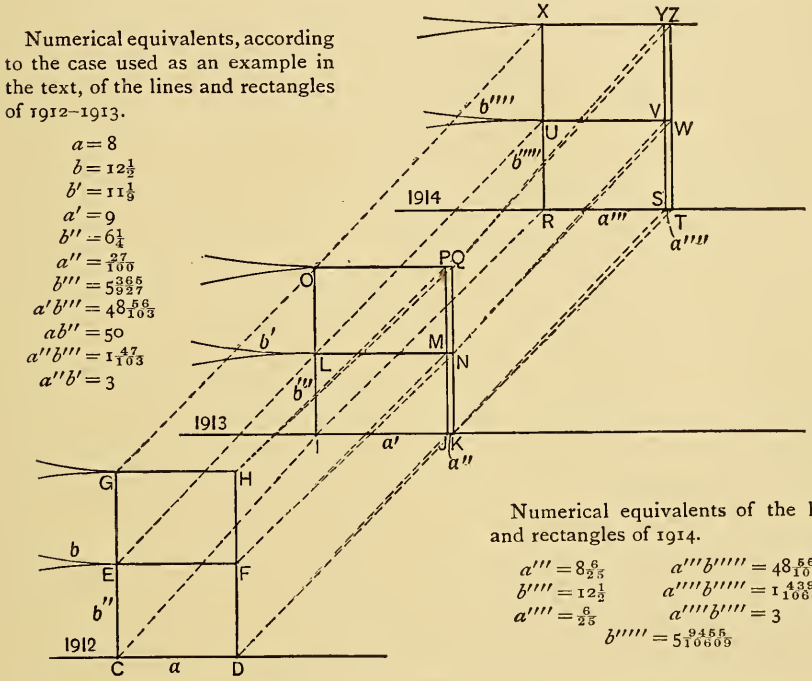
§ 52. As I have said, the relations of the many factors involved in our problem are hard to explain clearly by means of language only. They can be dealt with most conveniently in the symbols of algebra, to which therefore I have had recourse. Many minds, however, including my own, are not quite satisfied with their grasp of such relations until they have visualized them in terms of relations in space. For many of us, therefore, it is fortunate that the relations involved in the interest problem can be represented geometrically.

§ 53. It is to be especially noted that the pairs of curves which in Diagram III below coincide at *G*, *O*, *X*, *E*, *L*, and *U* are not the same curves we had in Diagram II (§ 41), which bound the estimated cost and the estimated value of the various units of advances (to nature), but those we had in Diagram I (§ 25), which bound the same factor-lines in the case of services.

In Diagram I we represented the cost or the value of any unit of services by a mere line instead of by an area because we assumed the unit of services whose cost or value was in question to be infinitesimal in size. In our present diagram, however, Diagram III, the marginal unit of services considered is in every case one of appre-

ciable size, so that its cost and its value — which are equal,[1] of course, since we are at the margin — will have to be represented by an area instead of by a line.

Since the curves bounding the cost and the value of various units of the supply of services coincide theoreti-



The capital letters indicate points. The small italics indicate lines corresponding to the factors designated by the same symbols in the algebraic sections of Chapter IV. Thus b'' is the line EC; b is the line GC; a is the line IJ, etc.

DIAGRAM III

cally at only a single point, as in Diagram I (§ 25), we ought theoretically to represent the cost and the value of a unit of services of appreciable size by two different areas such as the shaded areas of Figure I and Figure II below respectively. For the study of our particular problem, however, it will do no harm to represent the

[1] Except, of course, for the slight difference suggested in the following paragraph.

curves as coinciding in a horizontal line long enough to bound the top of the shaded areas representing respectively the cost and the value of the marginal unit of the services in question, so that the area becomes a rectangle. The assumption involved in doing this is, of course, merely that the cost and the value of the infinitesimal unit at the very margin hold true also of all parts of a unit of appreciable size. For example, the assumption is that in the case of the advance to nature of the services required to produce eight suits of clothes having a market price of $12.50 each, the cost and the value

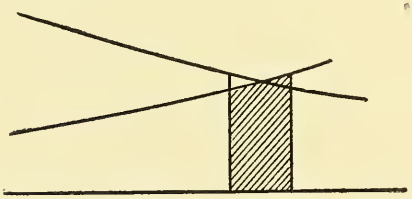


FIGURE I

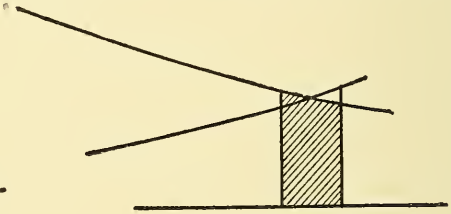


FIGURE II

of the infinitesimal unit of these services at the very margin holds true of all the other units of them; and no one will contend that the error of such an assumption can lead us astray in respect to the main factors of the interest problem.

The base-lines of Diagram III are those of three successive years, 1912, 1913, and 1914, as marked. For the illustration of the main factors of the problem the part of the diagram covering 1912 and 1913 is sufficient; but the part covering a third year is added to illustrate the factors involved in the compounding of interest, which we shall consider in § 59 below.

§ 54. The diagram illustrates the case of the advance

to nature involved in locking up in the storehouse of nature's causal nexus the services required to make eight suits of clothes, each having a market value corresponding to the price $12.50. It is drawn to scale, each objective unit being represented by a sixteenth of an inch laid off across the page from left to right, as from *C* towards *D* or from *I* towards *J*, and each subjective unit being represented by a sixteenth of an inch laid off up the page, as from *C* towards *G* or from *I* towards *O*. Of the two curves coinciding from *E* to *F*, the lower bounds the cost to the advancer [1] of successive increments of the services of 1912, the advance of which is illustrated by the diagram covering the two years; the upper bounds the value to him ditto. Of the two curves at *G*, on the other hand, the lower bounds the cost to the market of 1912 ditto, and the upper the value to the market of 1912 ditto. The pairs at *L* and *O* are the corresponding curves for the year 1913; but note that though the person for the curves at *L* is the same advancer we had for the curves at *E*, that is, any advancer of 1912 who at his margin is considering advancing the services *CD* to nature for one year, the market for the curves at *O* is not the same market we had at *G* but the market of 1913.

The services advanced — or whose advance is under consideration — are, as I have said, those required to make eight suits each having in 1912 a market value corresponding to the price $12.50. They are measured

[1] I mean either the actual or the potential advancer according to whether he actually decides to advance the services or not. As we are considering the situation when he has reached the margin of his advancing, we must admit that he is just as likely barely to fail to make the advance as barely to make it.

objectively by the line *CD*, also designated simply *a*, which is a very small part of the base-line, *LI*, of Diagram I (§ 25) — in fact the infinitesimal part at the point *V* of that base-line — magnified, as it were, to the length *CD*. The value of these services to the market of 1912 is represented by the parallelogram *CDHG*, for the up-and-down dimension of that parallelogram is made $12\frac{1}{2}$ sixteenths of an inch in length to correspond with the subjective factor of the market value of those services as it is indicated by the market value of each suit, which corresponds to the price $12.50. This parallelogram can be referred to more conveniently as *ab*, in which expression *a* stands for the dimension *CD*, the objective factor of the value in question, and *b* for the dimension *CG*, the subjective factor of the same value. The value of the same services, the services *a*, *to the advancer*, may differ from *ab*, of course, according to the difference between his personal subjective factor and *b*. If his personal subjective factor, which we shall call b'', happens to be half that of the society of 1912, we must make b'' half as long as *b*, as is done in the diagram. These subjective factors are chosen at random: any others would serve equally well.

Now consider the conditions just one year later, in 1913. The objective measure of the services required at that time to have an estimated value to the market of that time — in other words an estimated nominal value — equal to *ab* will depend on what the estimated subjective factor of the society of that time happens to be. If that estimated subjective factor, which we shall designate b', happens to be $11\frac{1}{9}$, the objective measure of the

services, yielded by the suits in 1913, that equal in nominal value the services a invested in making them in 1912, must be 9 units; for 9 times $11\frac{1}{9}$ equals 8 times $12\frac{1}{2}$. As this numerical equivalent is assumed for the case illustrated, the line b' (or IO) of the diagram is given a length of $11\frac{1}{9}$ sixteenths of an inch.

We now have a geometrical representation of the equation of the nominal value of the two lots of services that constitute, according to the definition of the principal always implied, though not clearly formulated, in men's thinking, the principal of the advance to nature we are analyzing; for the parallelogram $a'b'$, which represents the nominal value of the services that constitute the principal of 1913, is exactly equal in area to the parallelogram ab, which represents the nominal value of the services that constitute the principal of 1912.

§ 55. The estimated value to the advancer of the principal of 1913, that is, of the services a', is the next thing to be represented. It is determined, of course, by the estimated subjective factor of the advancer for 1913. What, then, is that subjective factor? All we know is that it must be less relatively to b'' than is b' relatively to b. The smaller we make b''', the greater will the difference be between ab'' and $a'b'''$, the greater the $a''b'''$ which must equal that difference, and the greater the $a''b'$ which measures the natural interest in the case. As we must assume a magnitude for b''', let us assume one for it such that our diagram will represent conditions about the same as those of the commercial centres of the world to-day, that is, as those where all persons cease making further advances to nature at a point where the

nominal surplus to be got by making a further advance to nature for one year — in other words, where the nominal value of such an advance — has fallen to, say, 3 % of the nominal value of the principal. That means drawing the line b''' so that $\frac{a''b'}{ab}$ equals $\frac{3}{100}$, or, since the ab of our diagram is 100, so that $a''b'$ equals 3. Well, then, if $a''b'$ is to be 3, a'' must be $\frac{3}{b'}$, which means $\frac{3}{11\frac{1}{9}}$, which means $\frac{27}{100}$; and if a'' is $\frac{27}{100}$, b''' must, according to the second equation of § 45 ($ab'' - a'b''' = a''b'''$), be $5\frac{36}{92}\frac{5}{7}$. The line b''' (or IL) of our diagram is therefore given a length of $5\frac{36}{92}\frac{5}{7}$ sixteenths of an inch. And so the rectangle $a'b'''$ represents the estimated value to the advancer at his margin of the services a' of 1913, which constitute the principal of the advance under consideration.

§ 56. Our next step is to represent in the diagram the estimated value to the advancer of the advance itself, at his margin of advances. By this I do not mean, remember, its estimated *net* value to him, its estimated value to him above its estimated cost to him. Such an estimated net value to him above estimated cost to him the advance at the margin cannot normally have. I mean the estimated value to him of the marginal advance considered independently of its possible estimated cost to him. To represent this estimated value we extend the line IJ past J twenty-seven hundredths ($\frac{27}{100}$) of a sixteenth of an inch and draw the rectangle having that added line (which we designate a'') as one dimension and b''' as the other. The estimated value of the advance to the advancer is then represented by the area of the rec-

tangle $a''b'''$ (or $JKNM$), which is $1\frac{47}{103}$ square sixteenths of an inch.

The estimated cost to the advancer of the advance, that is, its estimated cost to him quite independently of its estimated value to him, is represented on the diagram by the excess of the area of the parallelogram ab'' over that of the parallelogram $a'b'''$.

The entire second equation of § 45, namely $ab'' - a'b''' = a''b'''$, is now represented geometrically. For the excess of the area of the parallelogram ab'' over that of the parallelogram $a'b'''$ will be found to be precisely equal to the area of the parallelogram $a''b'''$.

§ 57. To represent on our diagram the nominal value of the so-called surplus services a'', which nominal value measures the interest in the case (the services themselves being the interest itself), we simply draw the rectangle having a'' for one dimension and b' for the other, that is, the rectangle $JKQP$. The area of this rectangle measures the nominal value of the so-called surplus services a'', which nominal value measures the natural interest normally obtainable, under the conditions assumed, by advancing to nature for one year services having a nominal value (represented by the area of $CDHG$, by that of $IJPO$, or by that of any parallel cross-section of the solid figure between them) of ab (which corresponds to $100 in our example) and having an objective measure in 1912 of a (which corresponds to eight suits of clothes in our example). The area of this rectangle ($JKQP$) is exactly 3 square sixteenths of an inch (which corresponds to $3 in our example).

The rate of interest in the case is represented by the

ratio of the area $a''b'$ (or $JKQP$) to the area ab, to the area $a'b'$, or to any of the other areas (of parallel cross-sections between them) representing the nominal value of the principal. As the area ab happens to be just 100 square sixteenths of an inch, the number of the square sixteenths of an inch in $a''b'$, which is 3, is the rate per cent of interest in the case.

§ 58. The question may arise in the minds of some readers whether it would have made any difference if we had supposed b'' to be greater instead of less than b. None at all. This will be clear to anybody who considers the significance of the algebraic solution of the problem in the preceding chapter, or to anybody who, distrusting his own ability to reason in the terms of algebra, makes the test in terms of geometry. It is not the relation of b'' to b, but that of $\frac{b'''}{b''}$ to $\frac{b'}{b}$, that causes the persistence of interest.

§ 59. The compounding of interest is shown graphically in Diagram III above by the representation of the principal of the advance of 1913–1914 as not the services a only but the services a plus the services a''.

Compound interest is often spoken of as if it were an unusual and artificial species of the genus interest. The truth is, however, that it is simple interest that is an arbitrary conception of men's minds, corresponding but very imperfectly to any phenomenon discoverable in nature, and that the conception of compound interest corresponds to natural conditions.

Compound interest is the aggregate of the prices of a series of advances. Of that series the first is the advance,

for the first compounding period, of the services which constitute the original principal in the case; the second is the advance, for the second compounding period, of services which constitute the original principal (the services a') plus services which constitute the interest (a'') of the first advance; the third is the advance, for the third compounding period, of services which constitute the principal of the second advance plus services which constitute the interest of the second advance; and so on. In commercial transactions the length of the compounding period is fixed by law or by contract, usually as six months or one year. Ideally, however, it should be infinitesimal; for the advance of services for the least time conceivable has ideally, on account of the relation of $\frac{b'''}{b''}$ to $\frac{b'}{b}$ already explained, some nominal value, however small, and an advance for an appreciable time really involves the making of a series of advances, each for an infinitesimal period and each of services constituting the principal plus the interest of the previous advance of the series.

§ 60. The question now arises: What is the effect, if any, on the rate of loan interest of the customary adoption, in accordance with law or contract, of so extended a compounding period as six months or a year? It is to raise that rate, above what it would be if the compounding period were infinitesimal, enough to make the return to the lender just what it would be if the compounding period were infinitesimal.

CHAPTER VI

Causes of the Normal Rate of Interest

§ 61. Usually, when people speak or write of the "causes of interest," they mean the causes of a positive rate, a rate above zero. What we want, however, is more than that: we want a comprehensive list of the causes that raise and the causes that lower the rate.

§ 62. In undertaking to determine these causes our first thought is that since $\frac{b'b''}{bb'''} - 1$ is the formula for the normal rate of interest, whatever increases $\frac{b'b''}{bb'''}$ must raise the rate, and whatever decreases $\frac{b'b''}{bb'''}$ must lower the rate. That is, of course, true; but as a criterion of the causes of effects on the rate it is not nearly so serviceable as that furnished by Diagram II (of § 41), in which the rate is represented by the length of a line, WV. The advantage for our present purpose of that diagram, which is reproduced with a slight addition below, is that it reveals the causes of the length of WV, which represents the rate of interest, as divisible into two groups, those on the value side, as we may call them, and those on the cost side. For the length of WV is fully determined by the height above the base-line of the point W. But that point, we know, must be on both the curve OR and the

curve *CH*. So the conditions or causes of the rate *WV* must be susceptible of division into two groups, those that determine the course of the curve *OR* where it is to cross the curve *CH*, and those that determine the course of the curve *CH* where it is to cross *OR*. Nothing can be a cause, on the value side, of a rise or a fall in the normal rate of interest except a change of conditions that respectively raises or lowers the curve *OR* so as to raise or lower the point of intersection *W*; and nothing

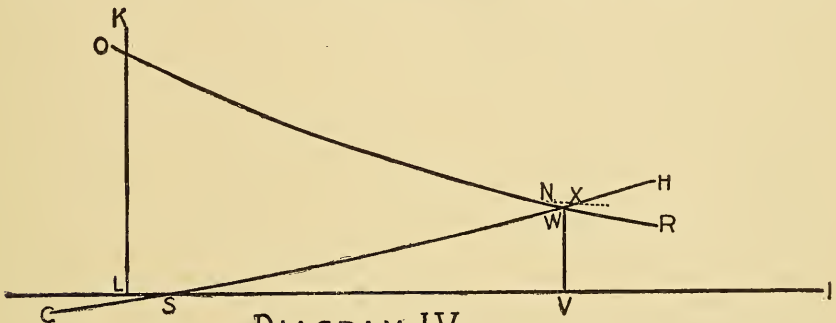


DIAGRAM IV

can be a cause, on the cost side, of a rise or a fall in the normal rate of interest except a change of conditions that respectively raises or lowers the curve *CH* so as to raise or lower the point of intersection *W*. All this will become clear as we proceed to apply it.

§ 63. What possible conditions, then, on the value side might raise the normal rate of interest? Applying the criterion derived from the diagram, we answer: Any conditions that change the course of *OR* so as to raise the point of its intersection with *CH*.

Among such conditions, clearly, are those changes that open opportunities for making advances to nature considered better than those previously considered mar-

ginal. (In this connection recall §§ 37–40 above, especially § 40.) For example suppose the time in question to be that of the first successful application of electricity to the propelling of street-cars; suppose the series of all the natural capitals — if I may use such a form of expression — in existence and yielding as much as the normal rate of interest at the time to be represented by *LI*; and suppose the **invention** — as we call it — of the electric car to reveal opportunities for the investment of services, up to an amount represented objectively by a sixteenth of an inch on *LI*, in advances to nature estimated to be more valuable or advantageous than those standing at the point *V* in the series. In that case services, in the form of the labor of artisans, represented objectively by a sixteenth of an inch on *LI*, which would have been devoted, if the invention had not been made, to making and repairing horse-cars and horse-buses, harnesses, and various other sorts of natural capital now displaced in the series, are now diverted to producing electric cars and all their accessories; and the effect of this on the curve *OR* is to raise its course from that point — say *N* in Diagram IV above — at which the electric cars and accessories standing highest take their place in the general series, on towards *R* or rather towards a point somewhat above *R*. The dotted line in Diagram IV indicates the course of the curve after the supposed effect of the invention has been felt. It is apparent that although the conditions determining the course of the curve *CH*, which are the causes of the rate of interest on the cost side, have remained unchanged, the point of intersection of the two curves is no longer *W*, but *X*,

which is higher than *W*. In other words the rate of interest has been raised. We may therefore declare, with an assurance impossible, as it seems to me, to any economist hitherto, that inventions may be causes, on the value side, of a rise in the rate of interest.

Discoveries, as of new lands or of unknown resources in old lands, may have on the rate of interest the same effect as inventions, and for the same reasons.

So also may an **extension** among men generally **of the scientific knowledge already possessed by a few**; so may an **increase**, on the part of laborers, **of skill** in the handling of machinery; so may an **increase of painstaking** in the handling of machinery; so, indeed, may any change whatever that raises *OR* so as to raise its intersection with *CH* when the course of *CH* itself remains unchanged.

One more class of these changes that may raise *OR* so as to raise its intersection with *CH* demands special explanation. I refer to changes that affect opportunities for making advantageous advances to nature of a sort seldom recognized as advances at all. Let me explain. A young man is really making an advance to nature when he undergoes pain and expense in training himself or educating himself in order to increase the economic value of his services, per unit of their cost, later. Consider the case of a lad who spends money — perhaps borrowed money — and works painfully hard to give himself a medical education. Though most of his expenses are for board and lodging, which he is unquestionably "consuming" if a person ever consumes anything, those very "expenses for consumption," as

well as his labor of study beyond the point to which he would study for his immediate pleasure, have in them an element of investment or of advancement to nature. The advice so often given to young men, "You cannot invest your time and money better than in getting a good education," implies — what is literally true from a strictly economic point of view — that educating one's self is making an investment or an advance. At every point in the circle, or rather the spiral, of economic life consumption and investment meet, just as consumption and production meet. The food and recreation that give me immediate pleasure to the extent of 50 units, say, may also put me into condition to produce immediately, above the services I could produce without them immediately with the same pain, services having a nominal value of 20. There you have the point of contact between consumption and production. But the same food and recreation may put me into condition to produce *by next year*, above the services I could produce without them immediately with the same pain, services having a nominal value of 21 units. There you have the point of contact between consumption and investment or advancing (to nature), for the twenty-first unit in this latter case is the nominal value of the advance for one year of the services, having a nominal value of 20 units, which I might have consumed at the earlier time but decided to forego for a year.

Here, then, to come back to our main line of thought, **in connection with consumption itself** are **opportunities for making advances to nature that may yield a nominal surplus**: in the case supposed just above, there was an

opportunity to secure, by such an advance to nature in connection with consumption, natural interest at the rate of 5 per cent; for 1 is 5 per cent of 20. And any changes that affect these opportunities or men's knowledge of them must clearly affect the rate of natural interest from the value side precisely as do changes in respect to the other sorts of opportunities that we associate with the words "invention" and "discovery." The introduction of the electric tram-car increased the value of advances to nature embodied in certain impressions, on the minds of young engineers, which we call knowledge of certain formulæ and principles connected with the application of electricity to the propulsion of cars. Therefore the investment of board-bills and painful study in this chapter of science was encouraged by the introduction of electric cars just as investment in the cars themselves was; and the services of boarding-house-keepers and printers, that had formerly been otherwise applied, were diverted to the making of advances to nature embodied in the additional education of certain young men. The finding of such new opportunities for making advances to nature, in connection with the young men's consumption, considered more advantageous or valuable than those previously considered marginal, has the effect of raising our curve *OR* from some such point as *N* on, and therefore of raising the normal rate of natural interest.

§ 64. I have now mentioned several groups of causes, on the value side, of a rise of the normal rate of natural interest. How many such causes are there? That depends wholly on how you conceive and define them.

If you conceive and define them as one comprehensive group, they take on the appearance of a single cause: conceive and define the conditions on the value side of a rise of the normal rate of interest as " all that increase the value of the marginal advance to nature," and you have reduced them to a single group which might be described as a single cause. If, however, you mention separately inventions, discoveries, and so forth, as I have done, and then proceed to break each one of these categories up into smaller categories and even into particular events, you are ready to declare the causes on the value side of a rise of the normal rate of interest to be many. Finally, if you inquire into the causes of the causes, the causes of the causes of the causes, and so on indefinitely, you are ready to say that the number of possible causes of a rise of the normal rate of interest is infinite. And such an assertion cannot validly be denied. The truth is that the cause of any event, the conditions preceding it without which it would not have occurred, may be conceived by our minds under the form of infinite multiplicity, under that of unity, or under that of some intermediate number of categories or groups; and the only ground for preferring one of these conceptions to any other is that of its serviceability in that classification of events in our minds which makes them, as we say, com-prehensi-ble to us, that is, capable of being grasped up together. It is only because it helps my thinking to do so, only because it helps me to grasp up together in my mind the relations (of groups of events) that I call the normal rate of interest and the conditions (of groups of events) that must precede those relations, that I first

divide all these conditions into two groups, those on the value side and those on the cost side, then divide the former group again into those that raise the rate and those that lower it, and finally divide the former subgroup into sub-subgroups defined by the use of such words as invention and discovery. This classification is immensely important to my thinking; but, after all, it is only a classification, and not an exhaustive and rigidly logical one at that. The number of its separate groups, as well as the principle of their demarcation, is not determined by the facts only but partly also by the requirements of our powers of comprehending them.

§ 65. The causes, on the value side, of a fall of the normal rate of interest are simply the changes of conditions contrary to those set forth above as causing a rise. By a change contrary to an invention which raises the normal rate of interest, for example, I mean such a **loss, on the part of the race, of scientific knowledge previously possessed** as eliminates some opportunities to make advances to nature whose elimination must result in a lowering of the point of intersection of the two curves. This sort of change we seldom think of because in our age scarcely any useful invention is forgotten, scarcely any useful scientific knowledge lost; but it is clear that if knowledge of the electric car were to be permanently lost, the value curve of our Diagram IV would fall from the course NX to the course NR, say, so that the point of intersection of the two curves would fall back from X to W.

§ 66. The causes on the cost side that raise the normal rate of interest, that is, the conditions that raise the

height of the point of intersection of OR and CH through their effect on CH only, must all be included in the one group of the conditions that increase $b'b''$ relatively to bb'''. This follows from the fact (see § 48) that the normal rate must always be the excess of $\frac{b'b''}{bb'''}$ over 1.

But it is best to divide this comprehensive group into two. It will be recalled that b' and b''' stand, not for the actual subjective factors, at the later time in question, of the changing society and of the advancer respectively, but for those subjective factors *as estimated by the advancer*. We may therefore divide the conditions that increase $b'b''$ relatively to bb''' into two groups, those that make the advancer's subjective factor decline actually with the passing of time, relatively to the changing society's, and those that make it seem to him to do so more than it does so actually.

§ 67. To the first of these two groups belong, notably, **all changes that decrease the duration of human life and all that diminish the degree to which men generally identify their heirs with themselves.** The shorter a person's life is to be, the greater the actual decline, with the passing of time, of his subjective factor relatively to the changing society's. And the less a person identifies his heirs with himself, the less he cares about their pleasure and pain, the greater the actual decline, with the passing of time, of his subjective factor relatively to the changing society's.

§ 68. To the second of the two groups — that of changes which increase the advancer's *estimate of* the relative decline of his subjective factor with the passing

of time without increasing the relative decline itself in reality — belong **such changes as those that decrease men's powers of realizing, of feeling as real, their own future pleasures and pains and the pleasures and pains of their heirs.**

§ 69. I need hardly say that the causes on the cost side of a fall of the normal rate of interest are the changes contrary to those on the cost side just set forth as causing a rise.

§ 70. It will be noticed that, on the cost side, it is the causes of a fall rather than those of a rise of the normal rate of interest that we are familiar with in the present age. At present human life is growing longer rather than shorter, men are probably growing more rather than less solicitous about the welfare of their heirs, and their error in overestimating the decline of their personal subjective factors of value, relatively to that of the changing society's subjective factor, is probably declining. So far as the causes on the cost side are concerned, therefore, we should expect the normal rate of interest to be falling at the present time.

On the value side, on the other hand, it is the causes of a rise of the normal rate of interest rather than those of a fall that seem to be at work nowadays. Inventions and discoveries that tend to raise the value line, as from NW to NX, are being made rather than being forgotten; an increase of technical skill, such as tends to raise the value line likewise, seems to be continuous; and opportunities to invest in education that have the same tendency open up all the time. So far, therefore, as the causes on the value side of a rise or a fall of the normal rate of interest

are concerned, we should expect that rate to be rising at the present time.

§ 71. Let us consider whether recent history confirms this theory of the causes of a rise or a fall in the rate of interest. The past century has been marked by an extraordinary number of inventions and discoveries, and by a rapid extension among men generally of the scientific knowledge first acquired by the few. So far as these conditions only were concerned, therefore, the tendency throughout the century should have been, according to the foregoing theory, for the rate of interest to be high. But on the other hand the century has not been marked by any tendency on the part of people generally to die younger, to be less solicitous about their heirs, or to be less rational in their estimation of future conditions; rather has the tendency been in the opposite direction. So far as this second point only is concerned, therefore, the tendency throughout the century should have been, according to the foregoing theory, for the rate of interest to be kept from rising much by the making of advances to nature sufficient in amount to produce that effect. And what, according to the foregoing theory, should have been the result and effect of both the groups of conditions mentioned? Simply the vibrating of the rate of interest up and down near a point above the minimum rate determined by the conditions on the cost side, and the keeping of the rate down so low as on the average it has been only by the supplying of advances to nature — in the form of railroads, machinery, buildings, and what not — in enormous amounts. And that is precisely what actually happened during the century.

Causes of Divergence from the Normal Rate

§ 72. Up to this point we have been studying the normal rate of interest, the word normal being used in a sense defined in § 18. We have now to consider the causes of the divergence from the normal of the *actual rate.* These causes, taken with those of the normal rate, should fully account for the actual rate under any circumstances.

§ 73. The nature of these causes is suggested in the definition of the word normal in § 18. Excepting only the cause implied in the fifth paragraph of § 41 and referred to in § 66 and § 68, namely the error of estimation on the part of the advancer, which I have included in the group of those that determine the rate I call normal, all causes whatever that prevent men's acting, in respect to the making of advances, according to their best economic interests would be classed by me as those that make the actual rate of interest diverge from the normal rate. Nearly all these preventing conditions may be called the imperfections of the market in advances. Specific examples lie all about us. In Alaska, let us say, there are many opportunities to make advances[1] to nature whose (nominal) value will be 8 % of the principal, in other words many opportunities to make advances to nature that will "earn 8 %." At the same time there are many persons in the United States — to say nothing of those in Alaska and elsewhere — who are aware that

[1] It is to be remembered that an advance, as I use the word, is not the goods or services advanced, which are things of two dimensions, but a thing of three dimensions, as explained in § 30.

such opportunities exist and who would gladly make some of the 8 % advances, in addition to all the advances they make at present, but who are prevented from making them by fear of being swindled or by inability to get together in coöperation enough other persons of like desires to make the investment to such advantage as to yield the 8 % mentioned. Thus the fear of dishonesty and the inability of large numbers of scattered persons to put their small advances together so as to invest them to the best advantage, — these are two notable sorts of preventing conditions that cause the actual rate of interest to diverge from the normal rate. Such conditions are most prevalent, evidently, in new and commercially ill-organized communities, and least prevalent in commercially well-organized communities, that is, those in which such institutions as "Dun's" and "Bradstreet's" and all kinds of banks are highly developed.

The effect on the actual rate of interest of such imperfections of the market in advances as I have just mentioned is, of course, to raise it. In the light of the previous chapters the reason is clear. Any conditions must raise the actual rate of interest, the nominal value of advances per unit of the principal, which tend to reduce the supply of advances to nature. And such imperfections in the market for advances obviously tend to reduce the supply of advances to nature just as any imperfections in the market for any sort of goods tend to reduce the supply of that sort of goods; for an obstruction to the purchase of any good is an obstruction to its virtual production (through demand) by the person who

would purchase it if the obstruction did not exist; and an obstruction to the borrowing of wealth, which is equivalent to the purchase of an advance to nature, is an obstruction to the virtual making of that advance (through demand) by the person who would borrow the wealth if the obstruction did not exist.

It must not be inferred, however, that the effect of all imperfections of the market in advances must be to raise the actual rate of interest. Imperfections of another sort, namely those that tend to prevent the withdrawal of advances that have once been made, must lower the rate of interest. Just as there are hindrances in the way of making investments which are perfectly satisfactory to the investor so far as all the considerations briefly explained above are concerned, so there are hindrances in the way of un-making investments which have become unsatisfactory to the investor so far as these same considerations are concerned. And these latter hindrances tend to reduce the actual rate of interest. An example of these hindrances is the practical difficulty of spending to-day ten dollars of the thousand you lent last week to the United States Steel Company by buying one of its bonds. Of course you could shift the bearing of the advance of the $10 to other shoulders by borrowing $10, on the security of your bond, at a bank; but in the way of your doing so is a considerable hindrance, the bother that the transaction would entail on yourself and the bank. Very likely you will go on advancing the $10 through days or weeks when, so far as the principles discussed in this book above are concerned, you prefer not to; and in that case you thereby lower the actual rate

of interest as the result of conditions not covered by the word normal as I use it.

§ 74. Having now accounted for what I call the normal rate of interest, and for the divergencies from that normal rate that result in the actual rate, I must make another important distinction. Distinct from the actual rate of interest under any conditions there is a somewhat higher rate which appears in the case of any advance involving an appreciable risk of losing the principal. This might be called the *actual rate as modified by a factor of risk*. The reason why I do not call it the actual rate simply is that only a part of what appears to be interest in the case is interest proper, the rest being clearly a return to the advancer necessary to induce him to take the risk of losing the principal involved in the case. Suppose two loans to be made in the same loan market — and that the most perfectly organized market in the world — and suppose them to be made at the same time. Even under those conditions one may be at what is called, in business transactions, "6 % interest," the other at what is called "3 % interest." Under those conditions the difference between 6 and 3 is not a difference between rates of what is really interest: it is a difference between rates of, on the one hand what is really interest plus the price of the bearing of a certain risk of losing the principal, and on the other hand what is really interest plus virtually nothing in the guise of such a price of risk-bearing. Thus in the case of both loans the actual rate, properly speaking, is barely less than 3 %, the extra 3 % of the 6 % in one of the cases arising from causes distinct from those giving rise to interest proper.

§ 75. Finally, distinct from the actual rate as modified by the factor of risk is the same rate as further modified by expected changes, between the beginning and the end of the time covered by the advance, in the nominal value of the money or goods named as the principal. I say the nominal value "of the money or goods named as the principal" instead of saying simply the nominal value "of the principal" because, by definition, the principal is a thing whose nominal value does not change with the passing of time. If you think of lending me $100 for a year, say, at a time when you think a dollar will depreciate during the year 2 %, you have no economic motive for making the loan unless you get back not only interest but also $2 to cover what has sometimes been called depreciation of the principal but what cannot be called that by any one who has defined principal correctly. The principal in the case, really, is $100 at the beginning of the year and $102 at the end of it, and the interest (as modified by the factor of risk) is the difference between all that you exact at the end of the year and $102. If, then, what you exact at the end of the year is $106, the actual rate of interest as modified by the factor of risk in the case is really $\frac{4}{102}$. To any one, however, who did not fully understand what the principal is, that rate as thus modified would appear to be $\frac{6}{100}$, or 6 %. The rate thus made up on the basis of a misconceived principal we may call the *apparent rate*.[1]

[1] In this paragraph I have covered what is discussed by many writers under the head of *interest and money*. See, for example, Pantaleoni's *Pure Economics*, Part III, Chap. III, 7; Marshall's *Principles*, pp. 676–677; I. Fisher's *The Rate of Interest*, pp. 257–288; and G. Cassel's *Nature and Necessity of Interest*, Chap. V, especially pp. 163–166.

§ 76. From the "apparent rate" of interest in any specific case we could determine, if we allowed for the error in conceiving the principal, the "actual rate as modified by the factor of risk" in the case. From this latter rate we could then determine, if only we could subtract the price necessary to induce the advancer to assume the risk in question, the "actual rate" (apart from risk). And, having the actual rate apart from risk, we could determine the "normal rate" of interest if we could subtract from the actual rate or add to it just enough to cover the effects of the imperfections of the market in advances and of other hindrances — aside from those I have referred to in § 66 and § 68 in connection with "estimation" — to men's acting, so far as advances are concerned, in accordance with their best economic interests. But these are important ifs: in reality we cannot know precisely how much to subtract from apparent interest to get actual interest or how much to subtract from or to add to actual interest to get normal interest. Nor is it important that we should do these things: what is important is merely that we should understand, first, the nature of that part of apparent interest which is not really interest at all, secondly, the nature of the hindrances which cause actual interest to differ from normal interest, and, thirdly and above all, the nature and causes of normal interest. These important ends I hope I have forwarded in this book.

CHAPTER VII

Other Theories of Interest

§ 77. So far as I know, no explanation of interest advanced hitherto has contained a definition of the principal at once explicit and defensible. And surely, since interest is nothing but a surplus above principal, failure to define the principal correctly is a defect in a theory of interest that is truly fundamental. To me, therefore, every theory of interest advanced hitherto with which I am acquainted is not merely incorrect in details but inadequate essentially.

I propose now to examine critically some of the outstanding specific features of the most noteworthy theories of interest that have recently been in vogue.

"Differences in Want and Provision for Want"

§ 78. I begin with what has been suggested as a cause of interest by several authors and has been presented in its classical form by Professor Böhm-Bawerk (as "the first great cause of difference in value between present and future goods") under the name of "the different circumstances of want and provision (*Bedarf und Deckung*) in present and future." [1]

[1] See Chapter II of Book V of *The Positive Theory of Capital* by Eugen von Böhm-Bawerk, translated by William Smart, London, 1891, Macmillan & Co.

These words last quoted describe in general terms what I also hold to be the cause of interest: it is precisely the "different circumstances of want and provision in present and future," on the part of any advancer, that make him, according to my theory, unwilling to make advances, that is, unwilling to exchange present goods for future goods, beyond the point where he gets a certain nominal surplus by doing so. Yet I know of no author whose treatment of this point reveals the true cause of interest. Böhm-Bawerk's chapter on it — to restrict the criticism to that — besides defining the principal incorrectly,[1] fails to prove the essential point that in the preponderating number of cases the relation between want and provision in the present as compared with that in the future is such as to make present goods more valuable than future goods. An examination of the chapter, as reprinted below, will show the reader that the essential point I speak of depends on the truth of the assertion, found in the latter part of the third paragraph, that the cases are rare in which "it is difficult or impracticable to keep the present goods till a time of worse provision comes." And that assertion is by no means true: in fact it is very costly, in most cases, to keep present goods till a time of worse provision in the future. Even so durable a thing as a plow has to be housed if it is not to deteriorate rapidly; and roofs cost labor and wear out in a few years.

[1] See the third sentence of Böhm-Bawerk's chapter, quoted below.

The same erroneous definition of the principal is implied by many other writers, for example by Professor F. A. Fetter, on page 135 (Chap. 16, § II, 1) and page 141 (Chap. 17, § 1, 1) of his admirable *Principles of Economics* (The Century Co., N. Y., 1907).

Following is the chapter itself, as translated by Professor Smart.

"Differences in Want and Provision for Want"

"The first great cause of difference in value between present and future goods consists in the different circumstances of want and provision (*Bedarf und Deckung*) in present and future. Present goods, as we know, receive their value from the circumstances of want and provision in the present: future goods from the same circumstances in those future periods of time when they will come into our disposal. If a person is badly in want of certain goods, or of goods in general, while he has reason to hope that, at a future period, he will be better off, he will always value a given quantity of immediately available goods at a higher figure than the same quantity of future goods. In economic life this occurs very frequently, and may be considered as typical in the two following cases. First, in all cases of immediate distress and necessity. A peasant who has had a bad harvest, or sustained loss by fire, an artisan who has had heavy expenses through illness or death in his family, a labourer who is starving; all these agree in valuing the present shilling, which lifts them out of direst need, ever so much more than the future shilling,—the proof being the usurious conditions to which such people often submit in order to raise money at the moment. Second, in the case of persons who have reason to look forward to economical circumstances of increasing comfort. Thus all kinds of beginners who have no means, such as young artists, lawyers, officials, budding doctors, men going into business,

are only too ready, in return for a sum of present goods which assists them to start in the vocation they have chosen, and acts as foundation of their economical existence, to promise a considerably larger sum on the condition that they do not require to pay it until they are in receipt of a decent income.

"Of course the contrary also occurs not unfrequently in economical life. There are persons who are comparatively well off at the moment, and who are likely to be worse off in the future. To this category belongs, among others, that very considerable number of people whose income is obtained, mostly or altogether, by personal exertions, and will, presumably, fall away at a later period of life when they become unfit for work. A merchant's clerk, for instance, who is in his fiftieth year, and has an income of £100, cannot expect to have anything better ten years later than, perhaps, a small retiring allowance of £30, or an annuity which he may secure by purchase at an assurance office. It is evident that to such people the marginal utility that depends on a shilling spent now is smaller than that depending on a shilling available in the more badly secured future. It would seem that, in such cases, a present shilling should be less valued than a future one. And so it would be if present goods were necessarily spent in the present, but that is not the case. Most goods, and among them, particularly, money, which represents all kinds of goods indifferently, are durable, and can, therefore, be reserved for the service of the future. The case, then, between present and future goods stands thus. The only possible uses of future goods are, naturally, future, while present goods

have the same possibility of future use, and have besides — according to choice — either the present uses, or those future ones which may turn up in the time that intervenes between the present moment and the future point of time with which the comparison is being made.

"Here then are two possibilities. Either it is the case that all those uses of the present and near future, which are generally taken into consideration as regards the good in question, are less important than the future uses; and in this case the present good will be reserved for these future uses, will derive its value from them, and will be just equal in value to a future good similarly available. Or it is the case that one of the earlier uses is more important; and then the present good gets its value from this use, and has, therefore, the advantage over the future good, which can only obtain its value from a less important future employment. But, usually, one never knows that some unforeseen occurrence in the near future may not give rise to some more urgent want. At any rate such a thing is possible, and it gives a chance of profitable employment to a good already on hand, such as, naturally, a good that will only come into our possession in the future has not got; — a chance which, as we have seen, is calculated in the amount of the value, and assessed, according to practical although incorrect methods, as an increment graduated according to its probability. To put it in figures. With £100 which will come into my hands at the end of five years, I can only aim at a marginal utility determined by the situation of things in the year 1896; we shall put this utility down at 1000 ideal units. With £100 at my disposal now, I can,

at the least, realise the same marginal utility of 1000 units, but if an urgent want, arising in the meantime, gives me an opportunity of obtaining a marginal utility of 1200, I may, possibly, realise it. Say, now, that the probability of such an opportunity occurring equals one-tenth, I shall estimate the value of the present £100 at 1000 units certain, and, beyond that, at one-tenth of the possible surplus of 200; that is, in all, at 1020 units. Present goods are, therefore, in the worst case, equal in value to future goods, and, as a rule, they have the advantage over them in being employed as a reserve. The only exception occurs in those comparatively rare cases where it is difficult or impracticable to keep the present goods till the time of worse provision comes. This happens, for instance, in the case of goods subject to rapid deterioration or decay, such as ice, fruit, and the like. Any fruit merchant in harvest time will put a considerably higher value on a bushel of grapes to be delivered in April than on a bushel of grapes in his store at the time. Or say that a rich man is anticipating a long period of arrest, during which his living will be conformed to the hard fare of prison régime, how willingly would he give the price of a hundred present luxurious meals if he could ensure ten such meals during his captivity!

"We may, then, draw up the balance-sheet which shows the influence of the different circumstances of Want and its Provision in present and future as follows. A great many persons who are not so well provided for in the present as they expect to be in the future, set a considerably higher value on present goods than on future. A great many persons who are better provided for in

the present than they expect to be in the future, but who have the chance of preserving present goods for the service of the future, and, moreover, of using them as a reserve fund for anything that may turn up in the meantime, value present goods either at the same figure as future, or a little higher. It is only in a fractional minority of cases, where communication between present and future is hindered or threatened by peculiar circumstances, that present goods have, for their owners, a lower subjective use value than future. This being the state of things, even if there was nothing else co-operating with this difference of want and provision in present and future, the resultant of the subjective valuations, which determines the objective exchange value, would obviously be such that present goods must maintain a proportionate advantage, a proportionate agio over future. But, besides this, there are other co-operating circumstances which work, even more distinctly, in the same direction."

Besides the criticisms on this chapter that I have made already one more is called for: the chapter quite fails to reveal the true bearing of want and provision at two separated times on the persistence of interest. That bearing is shown, it seems to me, only by an analysis essentially like that of Chapter IV of this book.

"Underestimation of Future Pleasures and Pains"

§ 79. A second cause of interest, advanced by many writers and included in my theory, is what Böhm-Bawerk

calls[1] the tendency to "attach a less importance to future pleasures and pains simply because they are future." This is given a place in my theory,[2] it will be recalled, as a notable condition of that error of estimation — in respect to the cost and the value, to the advancer, of a proposed advance — which would prevent some advances whose value to him would in reality be greater than their cost to him.

To regard this cause as acting cumulatively with others that limit the supply of advances, as do Böhm-Bawerk and some other writers, seems to me entirely correct; but to give it as such a cause without explicitly mentioning any other such cause (see § 66 above), as do some writers, not including Böhm-Bawerk, is to offer a theory that is altogether inadequate. For it is clear from the analysis in Chapter IV above that *interest would persist*, provided only that men did not live forever and did not regard the pleasures and pains of their remote descendants as virtually their own, *whether or not anybody ever underestimated his own future pleasures and pains*, in other words whether or not anybody ever underestimated his own future subjective factor of pleasure and pain relatively to that of the changing society.

"Technical Superiority of Present Goods"

§ 80. Consider now the third of the three conditions advanced by Böhm-Bawerk as the causes of interest, what he calls the "technical advantages residing in present goods," as compared with future goods, due to the

[1] *Positive Theory of Capital*, p. 253.

[2] See the fifth paragraph of § 41 and §§ 66 and 68.

alleged superiority, explained in Chapter V of Book V of *The Positive Theory of Capital*, of long over short processes of production.

The grounds of this third cause, which Böhm-Bawerk calls the "chief pillar" [1] of his whole theory, are fully set forth by him in a passage, beginning at page 260 of his translated work, which the reader is requested to examine at this point. The passage consists of the first three paragraphs of the excerpts reprinted from Böhm-Bawerk in § 82 below. The heart of it is this sentence at the end of the first paragraph: "As a rule, present goods are, on technical grounds, preferable instruments for the satisfaction of human wants, and assure us, therefore, of a higher marginal utility than future goods."

§ 81. Now it is true, for the reasons given in §§ 43–47 above, that present goods are, *to any person or group of persons*, preferable instruments, for the satisfaction of *their* wants, to future goods of the same nominal value. And therefore, of course, present goods command, in any exchange of present for future goods, a premium over future goods of the same nominal value. Therefore, too, the supply of advances to nature — that is, that of advances of services embodied in machinery, railroads, houses, and other future-service goods — is checked at the point where the only possible suppliers of such advances, namely particular persons or groups of persons, estimate the *value to them* of a further advance as no greater than its cost to them. And when advances to nature cease at that point, the services of the future-service goods are bound to show, when they accrue with the

[1] Work cited, p. 264.

passing of time, a nominal surplus over present services equal to them in value to the advancers. And it is this nominal surplus, this preferability, from the point of view of the changing society contemporary with each moment of the passing time, of the future services that will be yielded by present future-service goods to those present goods themselves, that Böhm-Bawerk misconceived as a "technical superiority" of present goods that are capable of yielding future services (and therefore of any present goods of the same market value) to future goods or services of — as I should express it — the same nominal value. The principle that "roundabout methods" of production "lead to greater results than direct methods," then, which Böhm-Bawerk considers "one of the most important and fundamental propositions in the whole theory of production," becomes, when rightly conceived, merely the principle that opportunities exist for so embodying present labor in advances to nature that the future services resulting shall exceed in nominal value the present services which that labor might have rendered instead. And that these opportunities remain open is due — to repeat again the point I have repeated so often — to the fact that the supply of advances to nature, which are inevitably involved in making the labor yield its services in the future instead of in the present, is limited, for the reasons explained in the preceding chapters, at the point where future services, when they accrue, show a nominal surplus over present services that are exactly equivalent to them from the point of view of the advancers, or in other words at the point where, in the estimation of advancers, present services

have more value to them than future services of the same nominal value will have.

This, together with what I say in the third paragraph of § 84 below in regard to the conception of "productivity," seems to me to express the true conception of the facts which Böhm-Bawerk misconceived as the "*technical* advantage residing in present goods," as compared with future goods, due to the superiority of long over short processes of production.

§ 82. Some of Böhm-Bawerk's errors on this point should, perhaps, be pointed out specifically.

In the first place it is not true — though Böhm-Bawerk implies it throughout [1] — that processes long in time are

[1] *The Positive Theory of Capital*, p. 19: "The lesson to be drawn from all these examples alike is obvious. It is — that a greater result is obtained by producing goods in roundabout ways than by producing them directly. Where a good can be produced either way, we have the fact that, by the indirect way, a greater product can be got with equal labour, or the same product with less labour."

Same work, p. 260: "It is an elementary fact of experience that methods of production which take time are more productive. That is to say, given the same quantity of productive instruments, the lengthier the productive method employed the greater the quantity of products that can be obtained."

Same work, p. 84: "On the whole it may be said that not only are the first steps more productive, but that every lengthening of the roundabout process is accompanied by a further increase in the technical result; as the process, however, is lengthened the amount of product, as a rule, increases in a smaller proportion. This proposition also is based on experience, and only on experience. What it says must be simply taken as a fact of the technique of production."

Same work, p. 91: "By means of these primary productive powers man may make the consumption goods he desires, either immediately, or through the medium of intermediate products called Capital. The latter method demands a sacrifice of time, but it has an advantage in the quan-

necessarily more productive — in any sense of the word — per unit of labor than processes shorter in time. To suppose this to be true is an error analogous to supposing that the more a thing costs, the greater must be its value. Into this latter error Böhm-Bawerk would be, of all men, the last to fall; and that he fell into the former one is surprising.

It is true, of course, that many of the processes that are "most productive," in the sense, say, of yielding services of the most nominal value, require also a long time. But that is not because to lengthen a process in time is *necessarily* to make it more productive in that sense: it is because any lengthening of a process that does happen to increase the nominal value of the services resulting is limited, for the reasons already explained in this book, at the point where the advancing involved in the lengthening of the process barely fails to yield the advancers a surplus-to-them, and where, therefore, it must yield them a nominal surplus persistently.

It will be seen that these several amendments to the "main pillar" of Böhm-Bawerk's theory of interest are all involved in the one change of substituting for his vague "future goods" the definite and correct conception of *future goods* [1] *of the same nominal value as the present goods with which they are to be compared.* The moment

tity of product, and this advantage, although perhaps in decreasing ratio, is associated with every prolongation of the roundabout way of production."

[1] This is the correct conception of the principal so far as *goods* are concerned. Of course the most helpful conception of the principal, as I have previously pointed out, is the conception of it in terms not of goods at all but of services. The *best* substitute for Böhm-Bawerk's "present goods and future goods" is *present services and future services of the same nominal value.*

that substitution is made, we are in a fair way to discover that the supposed "technical superiority" of present goods over future goods is not a technical superiority at all but a superiority in exchange value from the point of view of particular persons or groups of persons (as distinguished from the changing group which composes the society of the passing time).

It is well worth while to inquire next how so able a thinker as Böhm-Bawerk could have come to so erroneous a conclusion on this point. He came to it, strangely enough, by way of the fallacy that lesser minds have fallen into so often, the fallacy of reasoning in a circle. As we have seen, the true reason why "long processes" are "more productive" than "short processes" is that "present goods" command a premium over "future goods." If, therefore, we proceed to say that the premium which "present goods" command over "future goods" is due to the "greater productivity" of present goods, we have simply completed the circuit and come back to the point we started from.

Failing to conceive clearly just why "longer processes" are "more productive" than "shorter processes," Böhm-Bawerk not unnaturally thought he saw in the fact that the longer processes which men adopt are often in some sense "more productive" than shorter processes a reason why "present goods" command a premium over "future goods" that in some ill-defined sense are equal to the "present goods" except for their difference of time. His error may be traced in the following passages of *The Positive Theory of Capital.* The italic capitals, which are mine, indicate words that betray the error

most clearly. The ordinary capitals, which are also mine, indicate words that imply an inadequate or incorrect definition or conception of the principal.[1] The small italics are those of Smart's text. My comments on the passage, which immediately follow it, may well be read before as well as after the passage itself.

"There is still a third reason why present goods are, as a rule, worth more than future. The fact on which it is based has long been known in a general way, but its essential nature has been thoroughly misunderstood. Hidden in a perfect wilderness of mistakes, economists ever since Say and Lauderdale have been in the habit of going to it, under the name 'productivity of capital,' for their explanation and justification of Interest. This name, which has already been the cause of so many errors, and which, besides, does not altogether correspond with what it is intended to convey, I shall lay on one side, and shall confine myself to the facts of the case pure and simple. These facts are as follows :— that, as a

[1] In this connection may be quoted also some other passages from *The Positive Theory of Capital* which strongly suggest an erroneous conception of the principal.

P. 249: "If a person is badly in want of certain goods, or of goods in general, while he has reason to hope that, at a future period, he will be better off, he will always value a given quantity of immediately available goods at a higher figure than the same quantity of future goods."

Same work, p. 91: "The latter method demands a sacrifice of time, but it has an advantage in the quantity of product, and this advantage, although perhaps in decreasing ratio, is associated with every prolongation of the roundabout way of production."

Same work, p. 82: "With an equal expenditure of primary productive powers (that is to say, labour and valuable natural powers) more or better goods can be produced by a wisely chosen capitalist process than could be by direct unassisted production."

rule, present goods are, on technical grounds, preferable instruments for the satisfaction of human want, and assure us, therefore, a higher marginal utility than future goods.

"It is an elementary fact of experience that methods of production which take time are more productive. That is to say, given the same QUANTITY of productive instruments, the lengthier the productive method employed the greater the QUANTITY of products that can be obtained. In previous chapters we went very thoroughly into this, showed the reasons of it, and illustrated and confirmed it by many examples. I venture to think we may now assume it as proved. If, then, we take an AMOUNT of productive instruments available at a certain point of time as given, we have to represent the product, which may be turned out by increasingly lengthy processes, under the picture of a series increasing in a certain ratio, regular or irregular. Suppose that, in the year 1888, we have command of a definite QUANTITY of productive instruments, say, thirty days of labour, we may in terms of the above proposition, assume something like the following. The month's labour, employed in methods that give a return immediately, and are, therefore, very unremunerative, will yield only 100 UNITS OF PRODUCT: employed in a one year's process, it yields 200 UNITS, but, of course, yields them only for the year 1889: employed in a two years' process it yields 280 UNITS — for the year 1890 — and so on in increasing progression: say, 350 UNITS for 1891, 400 for 1892, 440 for 1893, 470 for 1894, and 500 for 1895.

"Compare with this what we may get from a similar QUANTITY of productive instruments, namely, a

month's labour, under the condition that we do not get possession of the labour till a year later. A month's labour which falls due in the year 1889 evidently yields nothing *FOR THE ECONOMIC YEAR 1888. IF ANY RESULT IS TO BE GOT FROM IT IN THE YEAR 1889* it can only be by employing it in the most unremunerative (because immediate) production, and that result will be, as above, 100 units. *IN 1890* it is possible to have a return of 200 units by employing it in a one year's method of production; *IN 1891* to have 280 units by employing it in a two years' process, and so on. In exactly the same way, with a month's labour falling due two years later, in 1890, nothing can be had to satisfy the wants of *THE ECONOMIC YEARS 1888 AND 1889*, while 100 units may be got *FOR 1890* by an unremunerative immediate process, 200 *FOR 1891*, 280 *FOR 1892*, and so on. If we group together in one table the result obtainable for the satisfaction of our wants from a similar amount of present, next year's, and succeeding years' productive instruments, we get the following scheme: —

A Month's Labour of the Year

Yields for the Economic Period	1888	1889	1890	1891
1888	100	—	—	—
1889	200	100	—	—
1890	280	200	100	—
1891	350	280	200	100
1892	400	350	280	200
1893	440	400	350	280
1894	470	440	400	350
1895	500	470	440	400

Units of Product

Putting these figures into words, the table shows that, whatever economic period we may fix upon, our economic interests for that period are more advanced by a month's labour of 1888 than by a month's labour of 1889, by one of 1889 than by one of 1890, and so on. *TO MEET THE WANTS OF 1888*, for example, a month's labour expended in the year 1889 or 1890 gives us nothing, while a month's labour expended in 1888 places at our command at least 100 units of product. *TO MEET THE WANTS OF 1893* a month of 1890 gives us 350 units, a month of 1889 400 units, a month of 1888 440 units. Whatever period of time we take as our standpoint of comparison, the earlier (present) AMOUNT of productive instruments is seen to be superior, technically, to the equally great later (future) AMOUNT.

"But is it superior also in the height of its marginal utility and value? Certainly it is. For if, in every conceivable department of wants for the supply of which we may or shall employ it, it puts more means of satisfaction at our disposal, it must have a greater importance for our wellbeing. Of course I am aware that the greater amount need not always have the greater value; — a bushel of corn in a year of famine may be worth more than two bushels after a rich harvest; a silver shilling before the discovery of America was worth more than five shillings are now. But for one and the same person, at one and the same point of time, the greater amount has always the greater value; whatever may be the absolute value of the bushel or the shilling, this much is certain, that, for me, two shillings or two bushels which I have to-day are worth more than one shilling or one bushel

which I have to-day. And in our comparison of the value of a present and a future AMOUNT of productive instruments the case is exactly similar. Possibly the 470 units of product which may be made from a month's labour in 1889 for the year 1895, are worth less than the 350 units which may be got from the same for the year 1892, and the latter, notwithstanding their numbers, may be the most valuable product which can be made out of a month of 1889 in general. In any case the 400 units which a man can gain by a month's labour of the year 1888 for the year 1892 are still more valuable, and therefore the superiority of the earlier (present) amount of productive instruments — here and everywhere, however the illustration may be varied — remains confirmed.

"The truth of the proposition, that the technical superiority of present to future means of production must also be associated with a superiority in value, may be made absolutely convincing by mathematical evidence if the tabular comparison, which we have drawn out to show the technical productiveness of different years of productive instruments, be extended to the marginal utility and value of the same. And since we have to deal here with a proposition which will form the chief pillar in my interest theory, I prefer to err on the side of making it too plain rather than risk not making it plain enough, and I shall spare no pains to prove it in the most complete way. In other respects, too, the trouble it costs us will not be altogether lost: as we proceed we shall get an occasional glimpse into certain relations which are seldom or never taken thought of, and yet,

none the less, have some importance towards giving us a complete and thorough grasp of the whole.

"The marginal utility and value of means of production depend, as we know, on the anticipated marginal utility and value of their product. But the means of production of which we have been speaking, the month's labour, may be invested in a production that yields an immediate return, or in a one, two, three, or ten years' period of production, and, according as it is so invested, we may obtain the very different product of 100, 200, 280, 350 units, and so on. Which of these products is to be our standard? The foregoing chapters have already given us the answer. In the case of goods which may be employed in different ways yielding different marginal utilities, it is the highest marginal utility that is the standard. Therefore, in our present case, it is that product which produces the greatest amount of value. But this need not coincide with the largest product, the product which contains the greatest number of units; on the contrary, it seldom or never coincides with that. We should obtain the greatest number of units by an infinitely long production process, or a process lasting a hundred or two hundred years. But goods which first come into possession in the lifetime of our grandchildren or great-grandchildren, have, in our valuation of to-day, little or no value.

"In determining which, of various possible products, has the highest value for us, we are guided by the two considerations of which we have just spoken. First, we are guided by the anticipated position of our provision at the various periods of time. If, for instance, a man

is ill provided for in the present, or not provided for at all, the UNIT OF PRODUCT[1] in the present may, on that very account, have so high a marginal utility and value, that the sum of value of 100 present units of product is greater to him than that of 500 units which he might have at his command in 1895. To another man, again, whose present is as well provided for, or nearly as well provided for, as his future, the advantage in numbers may give an advantage in value to the 500 units. The second consideration by which we are guided is, that our present valuation of a future good or product does not depend on its true marginal utility, but on our *subjective* estimation of the marginal utility. But, in forming this subjective estimate, there takes place, as we have already seen, a kind of perspective diminution; a diminution which is in direct ratio with the futurity of the time to which the good in question belongs. The amount of which we are in search, therefore, the greatest sum of value, will evidently belong to that one, among the various possible products, the number of whose items, multiplied by the value of the unit of product (as that value shows itself with regard to the relation of want and provision for want in the particular economic period, and with regard to the diminution which future goods undergo from perspective) gives the greatest amount of value.

"We shall put our illustration in figures chosen at random. I wish to emphasize that the figures *can* be

[1] By the word "unit" here Böhm-Bawerk must mean *unit as defined in terms of amount and quality*. He has nowhere suggested the unit of nominal value which the analysis requires.

chosen quite at random and varied by the reader at will, for our proposition maintains its validity in every conceivable position of subjective valuations. Moreover I intentionally take figures varying very greatly and irregularly, it being obvious enough, without any special demonstration, that, if the value of the unit of goods were not to vary for the different periods, or not to vary much, the present means of production, as giving a greater *quantity* of products, would inevitably give us also a greater sum of value. Assume, then, quite at random, that, for a certain individual, the true marginal utility and value of the unit of product — taking into account his special circumstances of provision which we shall suppose are, on the whole, gradually improving — are as follows: in 1888, 5 units of value (pounds, shillings, or units of any ideal standard); in 1889, 4; in 1890, 3.3; in 1891, 2.5; in 1892, 2.2; in 1893, 2.1; in 1894, 2; and in 1895, 1.5. This true marginal utility, then, by reason of perspective, experiences, for the later periods, an irregularly progressive reduction of this kind: for 1888 it is, subjectively estimated, 5 (without reduction); for 1889, instead of 4, it is 3.8; for 1890, instead of 3.3, it is only 3; for 1891, 2.2; for 1892, 2; for 1893, 1.8; for 1894, 1.5; and for 1895, 1. If, now, on the basis of these figures, we calculate the sums of value represented by the different possible products of a month's labour falling due in the various years, from 1888 to 1891, we get the following tables: —

A Month's Labour Available in 1888 Yields

For the Economic Period	Units of Product	True Marginal Utility of Unit	Marginal Utility reduced in Perspective	Amount of Value of Entire Product
1888	100	5	5	500
1889	200	4	3.8	760
1890	280	3.3	3	840
1891	350	2.5	2.2	770
1892	400	2.2	2	800
1893	440	2.1	1.8	792
1894	470	2	1.5	705
1895	500	1.5	1	500

A Month's Labour Available in 1889 Yields

For Economic Period	Units	True Marginal Utility	Reduced Marginal Utility	Value
1888	—	5	5	—
1889	100	4	3.8	380
1890	200	3.3	3	600
1891	280	2.5	2.2	616
1892	350	2.2	2	700
1893	400	2.1	1.8	720
1894	440	2	1.5	660
1895	470	1.5	1	470

A Month's Labour Available in 1890 Yields

For Economic Period	Units	True Marginal Utility	Reduced Marginal Utility	Value
1888	—	5	5	—
1889	—	4	3.8	—
1890	100	3·3	3	300
1891	200	2.5	2.2	440
1892	280	2.2	2	560
1893	350	2.1	1.8	630
1894	400	2	1.5	600
1895	440	1.5	1	440

A Month's Labour Available in 1891 Yields

For Economic Period	Units	True Marginal Utility	Reduced Marginal Utility	Value
1888	—	5	5	—
1889	—	4	3.8	—
1890	—	3·3	3	—
1891	100	2.5	2.2	220
1892	200	2.2	2	400
1893	280	2.1	1.8	504
1894	350	2	1.5	525
1895	400	1.5	1	400

"The conclusion we draw from these tables is the following. The highest value of product obtainable by the month's labour available in 1888 — that which determines its own valuation — is 840: the highest value obtainable by a month's labour available in 1889 is only 720: while the highest value obtainable by a month's labour available in 1890 and 1891 is 630 and 525 respectively. As a fact, therefore, the present month's labour is superior to all future ones, not only in technical productiveness, but also in marginal utility and value.

"I repeat emphatically that this result is not an accidental one, such as might have made its appearance in consequence of the particular figures used in our hypothesis. *ON THE SINGLE ASSUMPTION THAT LONGER METHODS OF PRODUCTION LEAD GENERALLY TO A GREATER PRODUCT, IT IS A NECESSARY RESULT;* a result which must have occurred, in an exactly similar way, whatever might have been the figures of quantity of product and value of unit in the different years.

"I must, further, lay particular weight on the fact, that *THIS RESULT DOES NOT MAKE ITS APPEARANCE SIMPLY BECAUSE, IN OUR HYPOTHESIS, WE HAVE INTRODUCED, AS ALREADY ACTIVE, THOSE OTHER TWO CIRCUMSTANCES WHICH ARE FITTED TO ACCOUNT FOR A SURPLUS VALUE OF PRESENT AS AGAINST FUTURE GOODS — NAMELY, A DIFFERENCE IN THE CIRCUMSTANCES OF PROVISION AT THE VARIOUS PERIODS OF TIME, AND A DIMINUTION OF THE FUTURE UTILITY BY WAY OF*

PERSPECTIVE. THE SUPERIORITY IN VALUE OF PRESENT MEANS OF PRODUCTION, WHICH IS BASED ON THEIR TECHNICAL SUPERIORITY, IS NOT ONE BORROWED FROM THESE CIRCUMSTANCES; IT WOULD EMERGE OF ITS OWN STRENGTH EVEN IF THESE WERE NOT ACTIVE AT ALL. I have introduced the two circumstances into the hypothesis only to make it a little more true to life, or, rather, to keep it from being quite absurd. Take, for instance, the influence of the reduction due to perspective entirely out of the illustration, and we get the following figures: —

A Month's Labour of the Year

Yields for the Economic Period — Units of Value

	1888	1889	1890	1891
1888	500	—	—	—
1889	800	400	—	—
1890	924	660	330	—
1891	875	700	500	250
1892	880	770	616	440
1893	924	840	735	588
1894	*940*	*880*	*800*	*700*
1895	750	705	660	600

"We see that now the absolute figures of the sums of value are increased throughout, and also that the economic centre of gravity is transferred to another year; but the thing which concerns us is that the result remains unchanged; — the month's labour of 1888 shows the highest figure of value, and all the others a decreasingly smaller one.

"But if we were also to abstract the difference in the

circumstances of provision in different periods of time, the situation would receive the stamp of extreme improbability, even of self-contradiction. If the value of the unit of product were to be the same in all periods of time, however remote, the most abundant product would, naturally, at the same time be the most valuable. But since the most abundant product is obtained by the most lengthy and roundabout methods of production, — perhaps extending over decades of years, — the economic centre of gravity, for all present means of production, would, on this assumption, be found at extremely remote periods of time — which is entirely contrary to all experience. And, besides, if such a state of things were to emerge at any particular point of time, it would immediately bring its own correction. For if every employment of goods for future periods is, not only technically, but economically, more remunerative than the employment of them for the present or near future, of course men would withdraw their stocks of goods, to a great extent, from the service of the present, and direct them to the more remunerative service of the future. But this would immediately cause an ebb-tide in the provision for the present, and a flood in the provision for the future, for the future would then have the double advantage of having a greater amount of productive instruments directed to its service, and those instruments employed in more fruitful methods of production. Thus the difference in the circumstances of provision, which might have disappeared for the moment, would recur of its own accord.

"But it is just at this point that we get the best

proof that the superiority in question is independent of differences in the circumstances of provision: so far from being obliged to borrow its strength and activity from any such difference, it is, on the contrary, able, if need be, to call forth this very difference. — Thus we get, as result of our digression, the assured conviction of two things; — first, that *THE PRODUCTIVE SUPERIORITY OF PRESENT GOODS ASSURES THEM, NOT ONLY A SURPLUS IN PRODUCT, BUT A SURPLUS IN VALUE*, and, second, that, *IN THIS SUPERIORITY, WE HAVE TO DEAL WITH A THIRD CAUSE OF THE SURPLUS VALUE, AND ONE WHICH IS INDEPENDENT OF ANY OF THE TWO ALREADY MENTIONED.*" [1]

"We have seen that there are three factors, each of which, *INDEPENDENTLY OF THE OTHER*, is adequate to account for a difference in value between present and future goods in favour of the former. These three factors are: The difference in the circumstances of provision between present and future; the underestimate, due to perspective, of future advantages and future goods; and, finally, the greater fruitfulness of lengthy methods of production." [2]

The error betrayed in the passages I have printed in italic capitals is that of inferring that because, for example, a month's labor of 1888 results in more "units

[1] The passage here quoted is all except the last two pages of Böhm-Bawerk's chapter on *The Technical Superiority of Present Goods*. I quote so fully because this work of Böhm-Bawerk's is out of print and not easily accessible to some who may read this book.

[2] This paragraph is from p. 273 of Böhm-Bawerk's *Positive Theory of Capital*.

of product" *for the year 1890* than a month's labor of 1889 does, the former must be the more valuable. It is revealed at once by saying that a month's labor of 1889 can be employed in a two-year process, in a ten-year process, or in a process *of any duration you please*, just as well as a month's labor of 1888 could. Of course, Professor Böhm-Bawerk would reply, but the labor of 1888, employed in a two-year process, would yield the product *in 1890*, whereas that of 1889, employed in a process of the same duration, would yield the product *in 1891*. Well, I rejoin, what of it? You must not assume that the product of 1890 is more valuable than a product exactly equal (either in your sense of "quantity and kind" or in mine of "nominal value") except that it is of 1891; for *that would be assuming, as an essential part of your explanation, quite all that you are trying in your book to explain.* You are trying to explain why "present goods" are more valuable than "future goods"; but without assuming just that as true, your whole attempt to connect the superiority of long over short processes of production with the premium that "present goods" command over "future goods" fails. "Future goods," I repeat, *may be used in as long processes of production as "present goods";* and the fact that, if the processes are of equal length, the product will appear later in the case of the "future goods," is nothing against the "future goods" *unless you assume quite all that we are trying to explain.*

§ 83. To see the fallacy from another point of view, consider the passages in italic capitals in the third paragraph above, which expresses the fallacious conclusion

itself very explicitly. "The productive superiority," says Böhm-Bawerk, "of present goods assures them, not only a surplus in product, but a surplus in value, and, second, . . . in this superiority we have to deal with a third cause of the surplus value, and one which is independent of any of the two already mentioned." As future goods can be employed in a productive process of any length you please, just as present goods can, *the only superiority of present goods over future goods of equal nominal value*[1] *is a superiority in value to particular persons or groups of persons;* and that superiority, so far from being independent of the first and second of the three causes of interest enumerated by Böhm-Bawerk, is dependent, as we have seen, on nothing whatever but those two causes. It is only because the wants of any particular person or groups of persons are in fact decreasing, relatively to those of the society contemporary with each moment of the passing time, and because the estimate of that relative decrease of their wants, as made by the persons concerned, may be exaggerated, that present goods have for those persons a value greater than that of future goods equal to them in nominal value. Böhm-Bawerk's supposed third cause of interest, therefore, which he regards as the "chief pillar" of his theory, cannot stand the test of critical analysis. "Present goods" have no technical superiority over "future goods." The superiority of present goods over those future goods with which they are to be compared in the analysis of the interest problem, namely future

[1] I abandon Böhm-Bawerk's conception of the principal for my own, because I assume that the reader is no longer in doubt on that point.

goods of the same nominal value, is not a technical superiority at all, but the same value-to-particular-persons-superiority that was mistaken by the upholders of the "productivity theory," whom Böhm-Bawerk scorned, for superiority in productivity. So far as this "chief pillar" is concerned, indeed, Böhm-Bawerk's theory, original as it appeared in the new setting and the brilliant treatment given it by him, is nothing whatever, essentially, but the old productivity theory decked out in new errors. Although, like the theorists of the productivity school, in which also some distinguished economists are still to be numbered, Böhm-Bawerk saw the importance for the theory of interest of the two undoubted facts, first, that there remain open persistently opportunities to secure a nominal surplus by embodying services in advances to nature, and, secondly, that the amount of this nominal surplus corresponds to the time dimension as well as to the other dimensions of the advance to nature necessary in the case, he failed as completely as did the productivity theorists to build those facts correctly into a theory of interest.

"Productivity"

§ 84. That the usefulness of tools does not account for the premium that "present goods" command over "future goods" has been demonstrated unanswerably by Böhm-Bawerk [1] and many others. And the validity of some of these demonstrations, including that of Böhm-Bawerk, is not in the least degree affected by substituting

[1] Notably, for example, on p. 139 of his *Capital and Interest*, translated by Smart: Macmillan & Co., London, 1890.

for the vague "present goods" and "future goods" used by writers generally hitherto words that express the conception of principal correctly and explicitly. It is unnecessary, therefore, for me to devote much space to this point. "Why," asks Böhm-Bawerk on page 139 of his *Capital and Interest*, "should a concrete capital that yields a great return not be highly valued on that account — so highly that its capital value would be equal to the value of the abundant return that flows form it? Why, *e.g.*, should a boat and net which, during the time that they last, help to procure an extra return of 2700 fish, not be considered exactly equal in value to these 2700 fish? But in that case — in all physical productivity — there would be no surplus value." To this there is no answer.

What, then, is the true connection between productivity, in the sense of the usefulness of tools, and the premium which present services command over future services of the same nominal value? This question I have really answered already, but it will do no harm to answer it again and more fully.

In the first place what, precisely, do we mean by the usefulness or productivity of tools? We mean that under certain circumstances the locking up for a time of human services, that is, labor, in that part of the storehouse of nature's causal nexus which we might call the laws of chemistry and physics, results in the receipt with the passage of time, from or through the tools in which the services are locked up, of services nominally more valuable than the services locked up would have been if rendered immediately instead of being thus locked up.

To say the same thing more briefly, we mean that, up to a certain point which in fact has never been reached, labor, to have its utmost value *from the point of view of the society of the passing time*, must be employed in processes requiring considerable time before its enjoyable services accrue and must be embodied during that considerable time in "intermediate products" [1] some of which are called tools.

§ 85. We may now consider what is the true connection between productivity, thus conceived, and the premium which present services command over future services of the same nominal value. It is this: productivity, so far from being the cause of the premium mentioned, is itself caused by the premium. That opportunities to secure a nominal surplus by making advances to nature still remain open, in other words that an additional tool is still "productive," is due to the fact that particular persons or groups of persons, who are the only [2] agents that could have eliminated the opportunity by making an additional advance to nature, have been prevented from doing so by the fact that present services were more valuable *to them* than future services of the same nominal value.

[1] This is Böhm-Bawerk's term. See p. 22 of *The Positive Theory of Capital.*

[2] As we have seen, the indispensable condition of taking advantage of one of these opportunities is making an advance to nature, locking up services for a time in the storehouse of nature's causal nexus; the indispensable condition of making an advance an advance is an advancer; and the advancer cannot be the "changing society," but must be a particular person or group of persons.

"Abstinence"

§ 86. Many writers, notably Senior,[1] regard abstinence as the key to the persistence of interest. The following passages will give an understanding of Senior's views on this point.

"*Instruments of Production*"

"Having explained the nature of Production and Consumption, we now proceed to consider the Agents by whose intervention Production takes place.

"I. Labour. — The primary Instruments of Production are Labour, and those Agents of which nature, unaided by man, affords us the assistance.

"Labour is the voluntary exertion of bodily or mental faculties for the purpose of Production. It may appear unnecessary to define a term having a meaning so precise and so generally understood. Peculiar notions respecting the causes of value have, however, led some Economists to employ the term labour in senses so different from its common acceptation, that for some time to come it will be dangerous to use the word without explanation. We have already observed that many recent writers have considered value as solely dependent on labour. When pressed to explain how wine in a cellar, or an oak in its progress from a sapling to a tree, could, on this principle, increase in value, they replied that they considered the improvement of the wine and the growth of the tree as so much additional labour bestowed

[1] *Political Economy*, second ed., London, 1850.

on each. We do not quite understand the meaning of this reply; but we have given a definition of labour, lest we should be supposed to include in it the unassisted operations of nature. It may also be well to remind our readers that this definition excludes all those exertions which are not intended, immediately or through their products, to be made the subjects of exchange. A hired messenger and a person walking for his amusement, a sportsman and a gamekeeper, the ladies at an English ball and a company of Natch girls in India, undergo the same fatigues; but ordinary language does not allow us to consider those as undergoing labour who exert themselves for the mere purpose of amusement.

"II. Natural Agents. — Under the term 'the Agents offered to us by nature,' or, to use a shorter expression, 'Natural Agents,' we include every productive agent so far as it does not derive its powers from the act of man.

"The term 'Natural Agent' is far from being a convenient designation, but we have adopted it partly because it has been already made use of in this sense by eminent writers, and partly because we have not been able to find one less objectionable. The principal of these agents is the land, with its mines, its rivers, its natural forests with their wild inhabitants, and, in short, all its spontaneous productions. To these must be added the ocean, the atmosphere, light and heat, and even those physical laws, such as gravitation and electricity, by the knowledge of which we are able to vary the combinations of matter. All these productive agents have in general, by what appears to be an inconvenient

synecdoche, been designated by the term 'land'; partly because the land, as a source of profit, is the most important of those which are susceptible of appropriation, but chiefly because its possession generally carries with it the command over most of the others. And it is to be remembered that, though the powers of nature are necessary to afford a substratum for the other instruments of production to work upon, they are not of themselves, when universally accessible, causes of value. Limitation in supply is, as we have seen, a necessary constituent of value; and what is universally accessible is practically unlimited in supply.

"III. ABSTINENCE. — But although Human Labour, and the Agency of Nature, independently of that of man, are the primary Productive Powers, they require the concurrence of a Third Productive Principle to give to them complete efficiency. The most laborious population, inhabiting the most fertile territory, if they devoted all their labour to the production of immediate results, and consumed its produce as it arose, would soon find their utmost exertions insufficient to produce even the mere necessaries of existence.

"To the Third Principle, or Instrument of Production, without which the two others are inefficient, we shall give the name of Abstinence: a term by which we express the conduct of a person who either abstains from the unproductive use of what he can command, or designedly prefers the production of remote to that of immediate results.

"It was to the effects of this Third Instrument of Production that we adverted, when we laid down, as

the third of our elementary propositions, that the Powers of Labour and of the other Instruments which produce Wealth may be indefinitely increased by using their Products as the means of further Production. All our subsequent remarks on abstinence are a development and illustration of this proposition; we say development and illustration, because it can scarcely be said to require formal proof.

"The division of the Instruments of Production into three great branches has long been familiar to Economists. Those branches they have generally termed Labour, Land, and Capital. In the principle of this division we agree; though we have substituted different expressions for the second and third branches. We have preferred the term Natural Agents to that of Land, to avoid designating a whole genus by the name of one of its species: a practice which has occasioned the other cognate species to be generally slighted and often forgotten. We have substituted the term 'Abstinence' for that of Capital on different grounds.

"The term 'Capital' has been so variously defined that it may be doubtful whether it have any generally received meaning. We think, however, that, in popular acceptation, and in that of Economists themselves, when they are not reminded of their definitions, that word signifies an article of wealth, the result of human exertion, employed in the production or distribution of wealth. We say the result of human exertion, in order to exclude those productive instruments to which we have given the name of natural agents, and which afford not profit, in the scientific sense of that word, but rent.

"It is evident that Capital, thus defined, is not a simple productive instrument; it is in most cases the result of all the three productive instruments combined. Some natural agent must have afforded the material, some delay of enjoyment must in general have reserved it from unproductive use, and some labour must in general have been employed to prepare and preserve it. By the word Abstinence, we wish to express that agent, distinct from labour and the agency of nature, the concurrence of which is necessary to the existence of Capital, and which stands in the same relation to Profit as Labour does to Wages. We are aware that we employ the word Abstinence in a more extensive sense than is warranted by common usage. Attention is usually drawn to abstinence only when it is not united with labour. It is recognized instantly in the conduct of a man who allows a tree or a domestic animal to attain its full growth; but it is less obvious when he plants the sapling or sows the seed corn. The observer's attention is occupied by the labour, and he omits to consider the additional sacrifice made when labour is undergone for a distant object. This additional sacrifice we comprehend under the term Abstinence; not because Abstinence is an unobjectionable expression for it, but because we have not been able to find one to which there are not still greater objections. We once thought of using 'providence'; but providence implies no self-denial, and has no necessary connection with profit. To take out an umbrella is provident, but not in the usual sense of the word profitable. We afterwards proposed 'frugality,' but frugality implies some care and attention, that is to

say, some labour; and though in practice Abstinence is almost always accompanied by some degree of labour, it is obviously necessary to keep them separate in an analysis of the instruments of production.

"It may be said that pure Abstinence, being a mere negation, cannot produce positive effects; the same remark might as well be applied to intrepidity, or even to liberty; but who ever objected to their being considered as equivalent to active agents? To abstain from the enjoyment which is in our power, or to seek distant rather than immediate results, are among the most painful exertions of the human will. It is true that such exertions are made, and indeed are frequent in every state of society, except perhaps in the very lowest, and have been made in the very lowest, for society could not otherwise have improved; but of all the means by which man can be raised in the scale of being, abstinence, as it is perhaps the most effective, is the slowest in its increase, and the least generally diffused. Among nations, those that are the least civilized, and among the different classes of the same nation those which are the worst educated, are always the most improvident, and consequently the least abstinent.

"Capital. — We have already defined Capital to be an article of wealth, the result of human exertion, employed in the production or distribution of wealth, and we have observed that each individual article of capital is in general the result of a combination of all the three great instruments of production — labour, abstinence, and the agency of nature." [1]

[1] Work cited, pp. 57–60.

"In the second class we have the words Capital, Capitalist, and Profit. These terms express the instrument, the person who employs or exercises it, and his remuneration; but there is no familiar term to express the act, the conduct of which profit is the reward, and which bears the same relation to profit which labour does to wages. To this conduct we have already given the name of Abstinence. The addition of this term will complete the nomenclature of the second class. Capital is an article of wealth, the result of human exertion, employed in the production or distribution of Wealth. Abstinence expresses both the act of abstaining from the unproductive use of capital, and also the similar conduct of the man who devotes his labour to the production of remote rather than of immediate results. The person who so acts is a Capitalist, the reward of his conduct is Profit." [1]

"We have seen that Profit is the remuneration of abstinence, and that abstinence is the deferring of enjoyment." [2]

§ 87. It is clear from the second passage quoted that what Senior terms "Profit" is what we nowadays term "interest." Interest, therefore, according to Senior, is that part of the income of society which is produced by "abstinence"; and it is therefore equitable that it should be received, as it is received, by members of society in proportion to their practice of "abstinence."

To what extent is this true?

The word "abstinence," in the first place, is not quite

[1] Work cited, p. 89.
[2] Work cited, p. 185.

the best one for the "deferring of enjoyment" which it is made by Senior to cover. Abstinence suggests going without the consumption in question altogether rather than merely deferring it. It lent itself readily, therefore, to the attacks of such men as Lassalle.[1] "The profit of capital," exclaims Lassalle, "is the 'wage of abstinence.' Happy, even priceless expression! The ascetic millionaires of Europe! Like Indian penitents or pillar saints they stand: on one leg, each on his column, with straining arm and pendulous body and pallid looks, holding a plate towards the people to collect the wages of their Abstinence. In their midst, towering up above all his fellows, as head penitent and ascetic, the Baron Rothschild! This is the condition of society! how could I ever so much misunderstand it!"

Better than the word "abstinence" is one suggested by Professor Silas Macvane in the *Quarterly Journal of Economics* for July, 1887, and adopted by Marshall and others since, the word "waiting." The deferring of consumption which is certainly involved, as Senior and some of his predecessors saw clearly, in the receipt by society of the surplus we call interest, is fully covered by the word "waiting"; and yet that word does not imply, as the word "abstinence" does, any diminution in aggregate consumption.

Suppose the word "waiting" substituted for the word

[1] Lassalle's attacks on abstinence as a justification for the receipt of interest by capitalists appeared in *Kapital und Arbeit*, Berlin, 1864, according to Böhm-Bawerk's *Capital and Interest*, p. 276, from which I quote the passage from Lassalle in the text.

"abstinence": what is then to be said of Senior's theory? The theory would then be true so far as it goes, but it would be inadequate. It is true that waiting or advancing is an indispensable condition of gaining the (nominal) surplus called interest. It is also equitable that whoever supplies this indispensable condition of the nominal surplus should be the one to receive the nominal surplus, or that every one should receive the nominal surplus that he has produced by his waiting or advancing.[1] But no theory is adequate to account for interest that does not explain just why the supply of waiting fails, age after age, to equal the demand at a price lower than about 3 per cent of the principal. If waiting produces a surplus and the surplus goes to those who wait, why do men set a limit to their waiting before they have exhausted all the opportunities to secure the surplus? Are the causes of the setting of this limit where it is set rational, or irrational, or both? And what are they? These questions — to say nothing of others that no economist could have been expected to answer, or even to ask, in Senior's time — Senior did not answer. On the whole Senior's theory is to be regarded as a well-constructed theory essentially true so far as it went.

Productivity and Waiting

§ 88. Some recent writers, notably Professor T. N. Carver, explain interest somewhat as Senior did, except that they use the better word "waiting" instead of "abstinence" and that they explain the causal connection between "productivity" and men's dislike of waiting,

[1] On this point see also § 90 below.

making use, in connection with productivity, of the significant conception of the margin brought into economic theory by Gossen,[1] Jevons,[2] Carl Menger,[3] Walras,[4] and others.[5] Pages 219–232 of Professor Carver's *Distribution of Wealth*[6] may be referred to as showing clearly this considerable advance beyond the theory of Senior.

Even in the hands of so recent and so able a writer as Carver, however, the problem of interest is not quite solved. Like all his predecessors, as it seems to me, Carver fails to discover the true conception of the principal, without which there can be no true conception of the surplus above principal that is called interest and consequently no satisfactory analysis of the whole problem. At times, to be sure, as on page 226, where he says that capital's "earning or its marginal productivity would, during its lifetime, just cover its cost," he appears to conceive the principal in terms of value and cost instead of in terms of amount and quality; but for the most part the amount and quality conception satisfies him.[7]

[1] H. H. Gossen: *Entwickelung der Gesetze des menschlichen Verkehrs*, 1854.

[2] W. S. Jevons: *Theory of Political Economy*, first ed. 1871.

[3] Carl Menger: *Grundsätze der Volkswirthschaftslehre*, 1871.

[4] Léon Walras: *Éléments d'Economie Pure*, 1874.

[5] For a detailed account of the history of the doctrine of marginal utility see a note on pp. 78 and 79 of Bruce's translation of M. Pantaleoni's *Pure Economics*, London, Macmillan, 1898.

[6] New York, The Macmillan Co., 1904.

[7] See, for example, these expressions: "more" and "amount" (p. 129); "total product," "amount," "more work," "largest product," "maximum per man," and "maximum per loom" (p. 220); "more," "less," "amount," and "larger number of plows" (p. 221). It is with

"Exploitation"

§ 89. Some writers, of whom Karl Marx has influenced the largest number of persons, have explained interest as due to the exploitation of employees by their employers. Marx's theory, developed in full in his work, *Das Kapital*, is expressed briefly also in the following passages quoted from a paper[1] read by him before the General Council of the International Workingmen's Association in 1865. The italics are those of the Century Press edition.

Labour Power

"Having now, as far as it could be done in such a cursory manner, analysed the nature of *Value*, of the *Value of any commodity whatever*, we must turn our attention to the specific *Value of Labour*. And here, again, I must startle you by a seeming paradox. All of you feel sure that what you daily sell is your Labour; that, therefore, Labour has a Price, and that, the price of a commodity being only the monetary expression of its value, there must certainly exist such a thing as the *Value of Labour*. However, there exists no such thing as the *Value of Labour* in the common acceptance of the word. We have seen that the amount of necessary Labour crystallised in a community constitutes its value.

such terms as these, and without the use of those covering any sort of value, that Carver explains "marginal productivity." As we have seen, productivity can be explained correctly only in terms of value.

[1] Published under the title of *Value, Price, and Profit* by the *Twentieth Century Press*, London, 1908. The passage quoted is from pp. 28–35.

Now, applying this notion of value, how could we define, say, the value of a ten hours' working day? How much labour is contained in that day? Ten hours' labour. To say that the value of a ten hours' working day is equal to ten hours' labour, or the quantity of labour contained in it, would be tautological, and, moreover, a nonsensical expression. Of course, having once found out the true hidden sense of the expression '*Value of Labour*,' we shall be able to interpret this irrational, and seemingly impossible application of value, in the same way that, having once made sure of the real movement of the celestial bodies, we shall be able to explain their apparent or merely phenomenal movements.

"What the workingman sells is not directly his *Labour*, but his *Labour power*, the temporary disposal of which he makes over to the capitalist. This is so much the case that — I do not know whether by the English laws, but certainly by some Continental laws — the *maximum time* is fixed for which a man is allowed to sell his labour power. If allowed to do so for any indefinite period whatever, slavery would be immediately restored. Such a sale, if it comprised his lifetime, for example, would make him at once the lifelong slave of his employer.

"One of the oldest economists and most original philosophers of England — Thomas Hobbes — has already, in his 'Leviathan,' instinctively hit upon this point overlooked by all his successors. He says: '*The value or worth of a man* is, as in all other things, his *price* — that is, so much as would be given for the *Use of his Power*.'

"Proceeding from this basis, we shall be able to determine the *Value of Labour* as that of all other commodities.

"But before doing so, we might ask, how does this strange phenomenon arise, that we find on the market a set of buyers possessed of land, machinery, raw material, and the means of subsistence, all of them, save land in its crude state, the *products of labour*, and, on the other hand, a set of sellers who have nothing to sell except their labour power, their working arms and brains? That the one set buy continually in order to make a profit and enrich themselves, while the other set continually sell in order to earn their livelihood? The inquiry into this question would be an inquiry into what the economists call '*Previous or Original Accumulation*,' but which ought to be called *Original Expropriation*. We should find that this so-called Original Accumulation means nothing but a series of historical processes, resulting in a *Decomposition* of the *Original Union* existing between the Labouring Man and his Instruments of Labour. Such an inquiry, however, lies beyond the pale of my present subject. The *Separation* between the Man of Labour and the Instruments of Labour once established, such a state of things will maintain itself and reproduce itself upon a constantly increasing scale, until a new and fundamental revolution in the mode of production shall again overturn it, and restore the original union in a new historical form.

"What, then, is the *Value of Labour Power?*

"Like that of every other commodity, its value is determined by the quantity of labour necessary to produce it. The labour power of a man exists only in his

living individuality. A certain mass of necessaries must be consumed by a man to grow up and maintain his life. But the man, like the machine, will wear out, and must be replaced by another man. Besides the mass of necessaries required for *his own* maintenance, he wants another amount of necessaries to bring up a certain quota of children that are to replace him on the labour market and to perpetuate the race of labourers. Moreover, to develop his labour power, and acquire a given skill, another amount of values must be spent. For our purpose it suffices to consider only *average* labour, the costs of whose education and development are vanishing magnitudes. Still I must seize upon this occasion to state that, as the costs of producing labour powers of different quality differ, so must differ the values of the labour powers employed in different trades. The cry for an *equality of wages* rests, therefore, upon a mistake, is an insane wish never to be fulfilled. It is an offspring of that false and superficial radicalism that accepts premises and tries to evade conclusions. Upon the basis of the wages system the value of labour power is settled like that of every other commodity; and as different kinds of labour powers have different values, or require different quantities of labour for their production, they *must* fetch different prices in the labour market. To clamour for *equal or even equitable retribution* on the basis of the wages system is the same as to clamour for *freedom* on the basis of the slavery system. What you think just or equitable is out of the question. The question is: What is necessary and unavoidable with a given system of production?

"After what has been said, it will be seen that the *value of labour power* is determined by the *value of the necessaries* required to produce, develop, maintain, and perpetuate the labour power.

Production of Surplus Value

"Now suppose that the average amount of the daily necessaries of a labouring man require *six hours of average labour* for their production. Suppose, moreover, six hours of average labour to be also realised in a quantity of gold equal to 3s. Then 3s. would be the *Price*, or the monetary expression of the *Daily Value* of that man's *Labour Power*. If he worked daily six hours he would daily produce a value sufficient to buy the average amount of his daily necessaries, or to maintain himself as a labouring man.

"But our man is a wages labourer. He must, therefore, sell his labour power to a capitalist. If he sells it at 3s. daily, or 18s. weekly, he sells it at its value. Suppose him to be a spinner. If he works six hours daily he will add to the cotton a value of 3s. daily. This value, daily added by him, would be an exact equivalent for the wages, or the price of his labour power, received daily. But in that case, no *surplus value* or *surplus produce* whatever would go to the capitalist. Here, then, we come to the rub.

"In buying the labour power of the workman, and paying its value, the capitalist, like every other purchaser, has acquired the right to consume or use the commodity bought. You consume or use the labour power of a man by making him work, as you consume

or use a machine by making it run. By buying the daily or weekly value of the labour power of the workman, the capitalist has, therefore, acquired the right to use or make that labour power work during the *whole day or week*. The working day or the working week has, of course, certain limits, but into this we shall afterwards look more closely.

"For the present I want to turn your attention to one decisive point.

"The *value* of the labour power is determined by the quantity of labour necessary to maintain or reproduce it, but the *use* of that labour power is only limited by the active energies and physical strength of the labourer. The daily or weekly *value* of the labour power is quite distinct from the daily or weekly exercise of that power, the same as the food a horse wants and the time it can carry the horseman are quite distinct. The quantity of labour by which the *value* of the workman's labour power is limited, forms by no means a limit to the quantity of labour which his labour power is apt to perform. Take the example of our spinner. We have seen that, to daily reproduce his labour power, he must daily reproduce a value of three shillings, which he will do by working six hours daily. But this does not disable him from working ten or twelve or more hours a day. But by paying the daily or weekly *value* of the spinner's labour power the capitalist has acquired the right of using that labour power during *the whole day or week*. He will, therefore, make him work say, daily, *twelve hours*. *Over and above* the six hours required to replace his wages, or the value of his labour power, he will,

therefore, have to work *six other hours*, which I shall call hours of *surplus labour*, which surplus labour will realise itself in a *surplus value* and a *surplus produce*. If our spinner, for example, by his daily labour of six hours, added three shillings' value of the cotton, a value forming an exact equivalent to his wages, he will, in twelve hours, add six shillings' worth to the cotton, and produce *a proportional surplus of yarn*. As he has sold his labour power to the capitalist, the whole value of produce created by him belongs to the capitalist, the owner pro tem. of his labour power. By advancing three shillings, the capitalist will, therefore, realise a value of six shillings, because advancing a value in which six hours of labour are crystallised, he will receive in return a value in which twelve hours of labour are crystallised. By repeating this same process daily, the capitalist will daily advance three shillings and daily pocket six shillings, one half of which will go to pay wages anew, and the other half of which will form *surplus value*, for which the capitalist pays no equivalent. It is this *sort of exchange between capital and labour* upon which capitalist production, or the wages system, is founded, and which must constantly result in reproducing the workingman as a workingman, and the capitalist as a capitalist.

"*The rate of surplus value*, all other circumstances remaining the same, will depend on the proportion between that part of the working day necessary to reproduce the value of the labour power and the *surplus time* or *surplus labour* performed for the capitalist. It will, therefore, depend on the *ratio in which the working day is pro-*

longed over and above that extent by which the workingman would only reproduce the value of his labour power, or replace his wages.

Value of Labour

"We must now return to the expression, '*Value, or Price of Labour.*'

"We have seen that, in fact, it is only the value of the labour power, measured by the values of commodities necessary for its maintenance. But since the workman receives his wages *after* his labour is performed, and knows, moreover, that what he actually gives to the capitalist is his labour, the value or price of his labour power necessarily appears to him as the *price* or *value of his labour itself.* If the price of his labour power is three shillings, in which six hours of labour are realised, and if he works twelve hours, he necessarily considers these three shillings as the value or price of twelve hours of labour, although these twelve hours of labour realise themselves in a value of six shillings. A double consequence flows from this.

"Firstly. The *value or price of the labour power* takes the semblance of the *price or value of labour itself*, although, strictly speaking, value and price of labour are senseless terms.

"Secondly. Although one part only of the workman's daily labour is *paid*, while the other part is *unpaid*, and while that unpaid or surplus labour constitutes exactly the fund out of which *surplus value* or *profit* is formed, it seems as if the aggregate labour was paid labour.

"This false appearance distinguishes *wages labour* from other *historical* forms of labour. On the basis of the wages system even the *unpaid* labour seems to be *paid* labour. With the *slave*, on the contrary, even that part of his labour which is paid appears to be unpaid. Of course, in order to work the slave must live, and one part of his working day goes to replace the value of his own maintenance. But since no bargain is struck between him and his master, and no acts of selling and buying are going on between the two parties, all his labour seems to be given away for nothing.

"Take, on the other hand, the peasant serf, such as he, I might say, until yesterday existed in the whole East of Europe. This peasant worked, for example, three days for himself on his own field or the field allotted to him, and the three subsequent days he performed compulsory and gratuitous labour on the estate of his lord. Here, then, the paid and unpaid parts of labour were sensibly separated, separated in time and space; and our Liberals overflowed with moral indignation at the preposterous notion of making a man work for nothing.

"In point of fact, however, whether a man works three days of the week for himself on his own field and three days for nothing on the estate of his lord, or whether he works in the factory or the workshop six hours daily for himself and six for his employer, comes to the same, although in the latter case the paid and unpaid portions of labour are inseparably mixed up with each other, and the nature of the whole transaction is completely masked by the *intervention of a contract* and the *pay* received at

the end of the week. The gratuitous labour appears to be voluntarily given in the one instance, and to be compulsory in the other. That makes all the difference.

"In using the words '*value of labour*,' I shall only use them as a popular slang term for '*value of labour power*.'

Profit is Made by Selling a Commodity at its Value

"Suppose an average hour of labour to be realised in a value equal to sixpence, or twelve average hours of labour to be realised in six shillings. Suppose, further, the value of labour to be three shillings or the produce of six hours' labour. If, then, in the raw material, machinery, and so forth, used up in a commodity, twenty-four hours of average labour were realised, its value would amount to twelve shillings. If, moreover, the workman employed by the capitalist added twelve hours of labour to those means of production, these twelve hours would be realised in an additional value of six shillings. The *total value of the product* would, therefore, amount to thirty-six hours of realised labour, and be equal to eighteen shillings. But as the value of labour, or the wages paid to the workman, would be three shillings only, no equivalent would have been paid by the capitalist for the six hours of surplus labour worked by the workman, and realised in the value of the commodity. By selling this commodity at its value for eighteen shillings, the capitalist would, therefore, realise a value of three shillings, for which he had paid no equivalent. These three shillings would constitute the

surplus value or profit pocketed by him. The capitalist would, consequently, realise the profit of three shillings, not by selling his commodity at a price *over and above* its value, but by selling it *at its real value*.

"The value of a commodity is determined by the *total quantity of labour* contained in it. But part of that quantity of labour is realised in a value for which an equivalent has been paid in the form of wages; part of it is realised in a value for which *no* equivalent has been paid. Part of the labour contained in the commodity is *paid* labour; part is *unpaid* labour. By selling, therefore, the commodity *at its value* — that is, as the crystallisation of the *total quantity of labour* bestowed upon it, the capitalist must necessarily sell it at a profit. He sells not only what has cost him an equivalent, but HE SELLS ALSO WHAT HAS COST HIM NOTHING, although it has cost his workman labour. The cost of the commodity to the capitalist and its real cost are different things. I repeat, therefore, that normal and average profits are made by selling commodities not *above*, but *at their real values*.

The Different Parts into which Surplus Value is Decomposed

"The *surplus value*, or that part of the total value of the commodity in which the *surplus labour* or *unpaid labour* of the workingman is realised, I call *Profit*. The whole of that profit is not pocketed by the employing capitalist. The monopoly of land enables the landlord to take one part of that *surplus value*, under the name of *rent*, whether the land is used for agricultural

buildings or railways, or for any other productive purpose. On the other hand, the very fact that the possession of the *instruments of labour* enables the employing capitalist to produce a *surplus value*, or, what comes to the same, *to appropriate to himself a certain amount of unpaid labour*, enables the owner of the means of labour, which he lends wholly or partly to the employing capitalist — enables, in one word, the money-lending capitalist to claim for himself under the name of *interest* another part of that surplus value, so that there remains to the employing capitalist *as such* only what is called *industrial* or *commercial profit*.

"By what laws this division of the total amount of surplus value amongst those three categories of people is regulated, is a question quite foreign to our subject. This much, however, results from what has been stated.

"*Rent, Interest, and Industrial Profit* are only *different names for* different parts of the *surplus value* of the commodity, or the *unpaid labour enclosed in it*, and they are *equally derived from this source, and from this source alone*."

§ 90. This theory, the exploitation theory as it is usually called, is erroneous in its main tenets. Its prime error, which vitiates the whole argument above and a large part of the whole Marxian philosophy, is the assumption that although competition would reduce the wages of laborers to equality with the cost of reproducing the laborers, it would not reduce the price of the product to the cost of producing it. In the absence of monopoly — and monopoly is not necessarily involved in Marx's theory — competition among employers would

cut the price of the commodities or services produced by each employee from six shillings down, down, until in the case of the marginal employer, that is, the employer to whom it was barely worth while to continue producing, it was just three shillings. This is on the supposition that no waiting or advancing is required in the process of production. Then the only "profits" left to any of the employers would be the difference between what each could produce and what the marginal employer could produce at the same cost; and those profits would obviously be in the nature of wages for superior directive ability.

But suppose — what is actually the case in virtually all modern production — that a considerable nominal surplus arises from keeping services to a considerable nominal value locked up, during the process of production in question, in the form of buildings, tools, machines, horses, office furniture, etc. Then the employers or others will be induced to make advances to secure this nominal surplus more and more until the (declining) value to the advancers of another increment of advances ceases to be greater than its (rising) cost to the advancers. And those advances will command as a price the nominal surplus which at the margin they produce. This nominal surplus will be received not at all by employers in their capacity of employers, but by advancers (savers, capitalists), whether they happen to be also the employers or not.

If Marx's theory were true, we should find the profits[1]

[1] I use the word in the very wide popular sense here, to include rent of land, "rent of ability," interest, and wages of management.

of manufacturers varying not only with the efficiency of their management and with the advantages they may have through some degree of monopoly, but also with the number of employees they hire, the amount of the daily wages they have to pay them, and the length of the working day. But we do not find their profits varying thus at all: we find them, on the other hand, varying with the employer's efficiency of management, with his advantages from monopoly, and with the amount of the advances, reckoned as I have reckoned them,[1] that he or somebody else has to make in order to manufacture the products in question with as little cost as possible, reckoning the interest on these advances as a cost or as the equivalent of a cost. And we find that that element of the manufacturer's profits which is interest, that is, nominal surplus due to advancing the principal, goes into the pocket of *whoever produces it by advancing the principal, regardless of whether he employs any wage laborers or not.*

"No *surplus value* or *surplus product* whatever would go to the capitalist," says Marx near the beginning of the passage reprinted above, if the capitalist cotton-manufacturer paid his spinners the full value of their contribution to the value of the cloth. This, as we have seen, is completely erroneous. *The capitalist, whether manufacturer also or merely a capitalist who lends to the manufacturer and perhaps holds bonds on the business, can certainly secure the nominal surplus called interest even when every*

[1] That is, reckoning the amount of an advance as a thing of three dimensions; I think it necessary to warn the reader once more that an advance is not to be confused with the services advanced.

wage-earner in the business is paid the full value of what he contributes to it.

It may be replied, of course, that without the coöperation of labor the capital used in a cotton factory could not possibly produce anything of value. But it could be rejoined with equal truth that on the other hand without the advances supplied by the "capitalists" the laborers could not produce cotton cloth having more than a trifling value in comparison with what they can produce with the coöperation of the advancers. It is just as unfair to say that the laborers deserve all the product as it is to say that the advancers (capitalists) deserve nearly all of it. The reasonable view is that the laborers deserve wages equal to the value of the marginal unit of their labor under the conditions of industry actually present, which is normally [1] just what they get, and that the advancers deserve the nominal surplus which the marginal unit of their advances creates, which is normally just what they get.

§ 91. If any reader is still in doubt whether Marx's theory may not, somehow, be true, let him consider the case of a Crusoe on his island before the appearance of his man Friday. Even Crusoe alone on his island could earn interest by making advances. He frequently has

[1] In the sense of the words "normally" defined in § 18. *Usually*, of course, wage-laborers get less than they would get if normal conditions prevailed: private appropriation of socially created values, notably those of favored land sites, private appropriation of the monopoly element of prices boosted by legal limitation of the freedom of the market under the so-called "protective tariff" system, and many less easily avoidable aberrations from normal conditions prevent wage-earners from receiving what they ought to.

occasion, we may suppose, to cross, at the cost of considerable discomfort, a certain brook. The cost of bridging the brook is much greater, let us say, than that of crossing it twice — and he will not have occasion to cross it more than once during the time required to bridge it — but much less than that of crossing it as many times as he will have occasion to cross it before the bridge wears out or even needs repairs. The case stands, then, thus. If he builds the bridge and enjoys the use of it for a long time, say until it needs repairs, he makes, from the point of view of pleasure and pain, a net loss while building the bridge but a net gain in the end. He is confronted, therefore, with precisely the same problem that confronts the wage worker in a cotton factory who considers whether or not he will buy a hundred dollar 5% bond issued for the purchase of needed machinery by the company for which he is working. If Crusoe invests, and uses the bridge long enough, he makes a net gain; but if he invests, and does not use the bridge long enough, he makes a net loss. If the wage worker invests, and enjoys his $5 a year of interest long enough, he makes a net gain; but if he invests, and does not enjoy the $5 a year long enough, he makes a net loss. Let us suppose that each man makes the investment mentioned. In doing so each eliminates one of the best remaining opportunities to secure a surplus by making an advance to nature. Suppose, now, that after a while Crusoe has eliminated (by taking advantage of them) so many of the opportunities open to him to secure a surplus by making advances to nature that the best opportunity remaining, though offering him a surplus provided he

enjoys the thing invested in *long enough*, offers him no surplus if he enjoys the thing no longer than he thinks he is likely to. At that point Crusoe may quite rationally restrict himself to continuing the advances to nature that he has made previously, without making any new ones. Suppose also that the time has come when our wage worker finds all opportunities eliminated for making advances that can safely be counted on to yield him over 4 % of nominal surplus or interest. Then perhaps he will consider, just as Crusoe did, that to make the best investment still open to him, that is, say, to buy a hundred dollar bond yielding 4 %, will mean no surplus *to him*. And at that point, like Crusoe, he may cease making new advances and rest satisfied with keeping invested what he has invested already.

There is absolutely no essential difference between the two cases. The only difference is that the principal — that is, the unit above which all is to be counted as surplus — and the surplus itself are defined, in Crusoe's case, in terms of his own pain and pleasure only, whereas in the case of the wage worker, who is the capitalist of our example, they are defined in terms of the pain and pleasure of those persons whose acts, in the market of the changing society of the passing time, determine nominal values. The surplus arises just the same with Crusoe as with the capitalist in society; its rate is determined in his case by essentially the same motives, which *may* be wholly rational, as I have supposed in the comparison; and it is really interest as well in the one case as in the other. Interest, therefore, is *independent of the wage system to which Marx supposed it to be due entirely.*

"The Fallacy of Saving"

§ 92. Among persons of Socialistic leanings one finds a few whose chief tenet in respect to the interest question is that it is pernicious to advise people generally to save because saving is not socially beneficial and would soon cease to be beneficial to the savers themselves if it were practised by all. This view is fully set forth by an acute writer, Mr. J. M. Robertson, M.P., in a book called *The Fallacy of Saving*.[1] According to that book, if the aggregate of saving were greater than it is now, the aggregate of consumption would necessarily be less; and if consumption were less, production would have to be less if it were not to glut the market. If all this were true, Mr. Robertson would be quite right, in my opinion, in pleading for "the substitution of an ideal of consumption for an ideal of parsimony."[2] But is the first condition true? Why should more saving necessarily mean less consumption? There is no reason whatever. On the contrary, the requisite of an increase of consumption that is not to require also additional pain in production is an increase of saving. The advancing, at the present time, of services to the value of over $100,000,000 by embodying them in improved channels in the Mississippi River and some of its tributaries would result, in the opinion of eminent engineers, in the receipt of a nominal surplus by somebody in the long run. But advancing, as defined in this book, does not differ a whit from saving: either, at bottom, is simply exchanging present

[1] London, 1892.

[2] *Fallacy of Saving*, p. 90.

income for future income, present services for future services. And clearly the nominal surplus securable by exchanging, in the way mentioned, a present income to the value of $100,000,000 for a future income to a still greater nominal value makes possible a greater consumption by society without greater cost.

Is there any reason why this greater consumption without greater cost should cause any glut in the market? None whatever; it is only when they are restricted by the barrier of cost that people do not take and consume services offered to them in the market. Furthermore — and the point of this remark will be clear to those who have read Mr. Robertson's book — the greater consumption without greater cost that is made possible by saving may take the form of better *quality*, *better* books, *better* furniture, *better* music, etc. — just as well as that of greater quantity. Which of the two forms the greater consumption takes depends simply on the demand, which is determined by the taste, of the public who constitute the market.

In any community in which investment in future-service goods — houses, ships, tools, or what not — yields a nominal surplus or interest — and doubtless every community in the world answers to this description — there is no fallacy at all involved in advising people generally to save up to the point where they themselves are unlikely, in their estimation, to be benefited by further saving. Normally the savings in such a community take the form of advances to nature that yield the nominal surplus that commonly goes by the name of interest. The nominal surplus thus yielded is, from the

point of view of the changing society of the community, all net gain; and from the point of view of the individual savers it is partly net gain except in the case of the very marginal unit of it.

"Fructification"

§ 93. "Fructification" is the name given by Professor Böhm-Bawerk to the interest theories of Turgot and Henry George.

Turgot's theory is expressed in these passages from his *Réflections sur la Formation et la Distribution des Richesses* (first printed in 1770) as translated by Professor W. J. Ashley.[1] Some passages of special significance to us I have indicated by capitals.

"Whoever, either from the revenue of his land, or from the wages of his labour or of his industry, receives each year more values than he needs to spend, may place this superfluity in reserve and accumulate it: these accumulated values are what is called *a capital*. The timid Miser, who amasses money only to quiet his imagination against the apprehension of needing the necessaries of life in an uncertain future, keeps his money in a hoard. If the dangers he foresaw should be realized and if he should be reduced by poverty to live each year upon his treasure, or if it should happen that a prodigal Heir should spend it by degrees, this treasure would soon be exhausted and the capital entirely lost to the Possessor: the latter can do much better with it. SINCE AN ESTATE OF LAND OF A CERTAIN REVENUE IS

[1] New York, Macmillan, 1898. The three quotations are from pp. 50–51, 52–54, and 67–69 respectively.

BUT THE EQUIVALENT OF A SUM OF VALUE EQUAL TO THIS REVENUE MULTIPLIED A CERTAIN NUMBER OF TIMES, IT FOLLOWS THAT ANY SUM WHATEVER OF VALUES IS THE EQUIVALENT OF AN ESTATE OF LAND PRODUCING A REVENUE EQUAL TO A DEFINITE FRACTION OF THAT SUM: it is absolutely indifferent whether this sum of values or this capital consists in a mass of metal or anything else, since the money represents every kind of value, just as every kind of value represents money. The Possessor of a *capital* can then, in the first place, employ it in the purchase of lands; but he has also other resources.

"In the earliest times he who set men to work furnished the materials himself and paid from day to day the wages of the Workman. It was the Cultivator or the Proprietor himself that gave to the Spinner the hemp he had gathered, and maintained her during the time of her working; then he handed over the yarn to a Weaver, to whom he gave every day the wages agreed upon; but these slight daily advances could be sufficient only for works of the simplest and roughest kind. A great number of Crafts, and even of the Crafts engaged in by the poorest Members of the Society, require that the same material should pass through a crowd of different hands, and undergo for a very long time exceedingly difficult and various operations. I have already mentioned the preparation of the leather whereof shoes are made: whoever has seen the establishment of a Tanner realizes the absolute impossibility of one poor man, or even of several poor men, providing themselves with

hides, lime, tan, utensils, etc., getting the buildings erected which are necessary for setting a Tan-house in operation, and living during several months until the leather is sold. In this Craft, and in many others, must not those who work at it have learned the trade before they venture to touch the materials, which they would spoil in their first attempts? Here, then, is another advance indispensable. Who, in the next place, will collect the materials for the work, the ingredients and the tools necessary for the process? Who will get canals, market halls, all the different kinds of buildings constructed? Who will enable that great number of Workmen to live until the leather is sold, of whom none could prepare a single skin by himself? Considering, moreover, that the profit on the sale of a single tanned hide could not furnish subsistence for any one of them. Who will defray the expenses for the instruction of Pupils and Apprentices? Who will procure for them the means of subsistence until they are taught, by enabling them to pass step by step from labour which is easy and proportioned to their age to labours which demand the utmost vigour and ability? It will be one of those Possessors of *capitals*, or of movable accumulated values, who will employ them, partly in advances for the construction of the establishment and for the purchase of materials, partly for the daily wages of the Workmen who labour in the preparation (of the commodities). IT IS HE WHO WILL WAIT FOR THE SALE OF THE LEATHER TO RETURN TO HIM NOT ONLY ALL HIS ADVANCES BUT A PROFIT IN ADDITION, SUFFICIENT TO MAKE UP TO HIM FOR

WHAT HIS MONEY WOULD HAVE BEEN WORTH TO HIM IF HE HAD EMPLOYED IT IN THE PURCHASE OF AN ESTATE; and, furthermore, for the wages due to his labours, his cares, his risks, and even his skill; for doubtless, if the profit were the same, he would have preferred to live without exertion on the revenue of the land he could have acquired with the same capital. As fast as this capital comes back to him by the sale of the products, he uses it for new purchases in order to supply and maintain his Manufactory by this continual circulation: on his profits he lives, and he places on one side what he can spare to increase his capital and put into his business, adding to the amount of his advances in order to add still more to his profits.

"The price of the loan is by no means founded, as might be imagined, on the profit the borrower hopes to make with the capital of which he purchases the use. This price is determined, like the price of all merchandise, by the chaffering of seller and buyer, by the balance of the offer with the demand. People borrow with every kind of purpose and with every sort of motive. This one borrows to undertake an enterprise which will make his fortune, this other to purchase an estate: another to pay a gaming debt; another to make up for the loss of his revenue of which some accident has deprived him; and another to keep himself alive until he can get something by his labour; but all these motives which influence the borrower are quite indifferent to the lender. He cares about two things only, the interest he is to receive, and the safety of his capital. He does not trouble

himself about the use the borrower will make of it, any more than a Merchant concerns himself with the use a purchaser will make of the commodities he sells him.

"It is for want of having looked at lending on interest in its true light that certain moralists, more rigid than enlightened, have endeavoured to make us regard it as a crime. The Scholastic theologians have concluded from the fact that money produces nothing by itself that it was unjust to demand interest for money placed on loan. Full of their prejudices, they have believed their doctrine was sanctioned by this passage of the Gospel: *Mutuum date, nihil inde sperantes.* Those theologians who have adopted more reasonable principles on the subject of interest have had to endure the harshest reproaches from writers of the opposite party.

"Nevertheless it needs but little reflection to realize the frivolity of the pretexts which have been made use of to condemn the taking of interest. A loan is a reciprocal contract, free between the two parties, which they make only because it is advantageous to them. It is evident that, if the Lender finds it to his advantage to receive something as the hire of his money, the Borrower is equally interested in finding the money of which he stands in need; as is shown by his making up his mind to borrow and to pay the hire of the money: but on what principle can one imagine a crime in a contract which is advantageous to the two parties, with which both are content and which certainly does not injure anyone else. To say that the Lender takes advantage of the Borrower's need of money to demand interest for it is to talk as absurdly as if one should say that a Baker

who demands money for the bread he sells takes advantage of the Purchaser's need of bread. If, in the latter case, the money is the equivalent of the bread the Purchaser receives, the money which the Borrower receives to-day is equally the equivalent of the capital and of the interest which he promises to return at the expiration of a certain time; for, in short, it is an advantage for the Borrower to have during this interval the money he stands in need of, and it is a disadvantage to the Lender to be deprived of it. This disadvantage is capable of being estimated, and it is estimated; the interest is the price of it. This price ought to be higher if the Lender runs a risk of losing his capital by the insolvency of the Borrower. The bargain, therefore, is perfectly equal on both sides, and consequently fair. Money considered as a physical substance, as a mass of metal, does not produce anything; but money employed in advances for enterprises in Agriculture, Manufacture, and Commerce procures a definite profit. WITH MONEY ONE CAN PURCHASE AN ESTATE, AND THEREBY PROCURE A REVENUE. THE PERSON, THEREFORE, WHO LENDS HIS MONEY DOES NOT MERELY GIVE UP THE BARREN POSSESSION OF THAT MONEY; HE DEPRIVES HIMSELF OF THE PROFIT OR OF THE REVENUE WHICH HE WOULD HAVE BEEN ABLE TO PROCURE BY IT; and the interest which indemnifies him for this privation cannot be regarded as unjust."

"The position of the Husbandman is very different [from that of landless workmen]. The land pays him

directly the price of his labour, independently of any other man or any agreement. Nature does not bargain with him to oblige him to content himself with what is absolutely necessary. What she grants is proportioned neither to his wants, nor to a contractual valuation of the price of his days of labour. It is the physical result of the fertility of the soil, and of the wisdom, far more than of the laboriousness, of the means which he has employed to render it fertile. As soon as the labour of the Husbandman produces more than his wants, he can, with this superfluity that nature accords him as a pure gift, over and above the wages of his toil, buy the labour of the other members of the society. The latter, in selling to him, gain only their livelihood; but the Husbandman gathers, beyond his subsistence, a wealth which is independent and disposable, which he has not bought and which he sells."

"By this new arrangement [division of the land between working farmers and non-working proprietors] the produce of the land is divided into two parts. The one includes the subsistence and the profits of the Husbandman, which are the reward of his labour and the condition upon which he undertakes to cultivate the field of the Proprietor. What remains is that independent and disposable part which the land gives as a pure gift to him who cultivates it, over and above his advances and the wages of his trouble; and this is the portion of the Proprietor, or the *revenue* with which the latter can live without labour and which he carries where he will."

From these passages it is clear that Turgot regards interest on loans as a mere reflection of the net revenue

which an investment of the same amount in land might bring the investor, and that he regards the net revenue which the investment in land would yield as caused by the spontaneous fertility of the soil.

This theory of interest is just as good as that which explains interest as due simply to the "productivity" or usefulness of tools or machines — and no better. Both theories are plausible enough until the fatal question is asked, Why can the land, or the machine, be bought at a price lower than the sum of the prices of all its future services? But when that question is asked, both theories fail utterly.

§ 94. More than a hundred years after the publication of Turgot's theory, a similar one was advanced by Henry George in his *Progress and Poverty*.[1] The net revenue or surplus of which interest is a reflection is due, in George's thought, to "the active power of nature, the principle of growth, of reproduction, which everywhere characterizes all the forms of that mysterious thing or condition which we call life." The following passage from *Progress and Poverty*[2] expresses George's theory, which is clearly summed up in a few lines, near the end, which I have printed in capitals.

"Why should interest be? Interest, we are told, in all the standard works, is the reward of abstinence. But, manifestly, this does not sufficiently account for it. Abstinence is not an active, but a passive quality; it is not a doing — it is simply a not doing. Abstinence in itself produces nothing. Why, then, should any part of

[1] Written in 1877–1879, published in 1879.

[2] Edition of Doubleday, Page and Co., N.Y., 1906, pp. 175–182.

what is produced be claimed for it? If I have a sum of money which I lock up for a year, I have exercised as much abstinence as though I had loaned it. Yet, though in the latter case I will expect it to be returned to me with an additional sum by way of interest, in the former I will have but the same sum, and no increase. But the abstinence is the same. If it be said that in lending it I do the borrower a service, it may be replied that he also does me a service in keeping it safely — a service that under some conditions may be very valuable, and for which I would willingly pay, rather than not have it; and a service which, as to some forms of capital, may be even more obvious than as to money. For there are many forms of capital which will not keep, but must be constantly renewed; and many which are onerous to maintain if one has no immediate use for them. So, if the accumulator of capital helps the user of capital by loaning it to him, does not the user discharge the debt in full when he hands it back? Is not the secure preservation, the maintenance, the re-creation of capital, a complete offset to the use? Accumulation is the end and aim of abstinence. Abstinence can go no further and accomplish no more; nor of itself can it even do this. If we were merely to abstain from using it, how much wealth would disappear in a year! And how little would be left at the end of two years! Hence, if more is demanded for abstinence than the safe return of capital, is not labor wronged? Such ideas as these underlie the widespread opinion that interest can accrue only at the expense of labor, and is in fact a robbery of labor which in a social condition based on justice would be abolished.

"The attempts to refute these views do not appear to me always successful. For instance, as it illustrates the usual reasoning, take Bastiat's oft-quoted illustration of the plane. One carpenter, James, at the expense of ten days' labor, makes himself a plane, which will last in use for 290 of the 300 working days of the year. William, another carpenter, proposes to borrow the plane for a year, offering to give back at the end of that time, when the plane will be worn out, a new plane equally as good. James objects to lending the plane on these terms, urging that if he merely gets back a plane, he will have nothing to compensate him for the loss of the advantage which the use of the plane during the year would give him. William, admitting this, agrees not merely to return a plane, but, in addition, to give James a new plank. The agreement is carried out to mutual satisfaction. The plane is used up during the year, but at the end of the year James receives as good a one, and a plank in addition. He lends the new plane again and again, until finally it passes into the hands of his son, 'who still continues to lend it,' receiving a plank each time. This plank, which represents interest, is said to be a natural and equitable remuneration, as by giving it in return for the use of the plane, William 'obtains the power which exists in the tool to increase the productiveness of labor,' and is no worse off than he would have been had he not borrowed the plane; while James obtains no more than he would have had if he had retained and used the plane instead of lending it.

"Is this really so? It will be observed that it is not affirmed that James could make the plane and William

could not, for that would be to make the plank the reward of superior skill. It is only that James had abstained from consuming the result of his labor until he had accumulated it in the form of a plane — which is the essential idea of capital.

"Now, if James had not lent the plane, he could have used it for 290 days, when it would have been worn out, and he would have been obliged to take the remaining ten days of the working year to make a new plane. If William had not borrowed the plane, he would have taken ten days to make himself a plane, which he could have used for the remaining 290 days. Thus, if we take a plank to represent the fruits of a day's labor with the aid of a plane, at the end of the year, had no borrowing taken place, each would have stood with reference to the plane as he commenced, James with a plane, and William with none, and each would have had as the result of the year's work 290 planks. If the condition of the borrowing had been what William first proposed, the return of a new plane, the same relative situation would have been secured. William would have worked for 290 days, and taken the last ten days to make the new plane to return to James. James would have taken the first ten days of the year to make another plane which would have lasted for 290 days, when he would have received a new plane from William. Thus, the simple return of the plane would have put each in the same position at the end of the year as if no borrowing had taken place. James would have lost nothing to the gain of William, and William would have gained nothing to the loss of James. Each would have had the re-

turn his labor would otherwise have yielded — viz., 290 planks, and James would have had the advantage with which he started, a new plane.

"But when, in addition to the return of a plane, a plank is given, James at the end of the year will be in a better position than if there had been no borrowing, and William in a worse. James will have 291 planks and a new plane, and William 289 planks and no plane. If William now borrows the plank as well as the plane on the same terms as before, he will at the end of the year have to return to James a plane, two planks and a fraction of a plank; and if this difference be again borrowed, and so on, is it not evident that the income of the one will progressively decline, and that of the other will progressively increase, until at length, if the operation be continued, the time will come when, as the result of the original lending of a plane, James will obtain the whole result of William's labor — that is to say, William will become virtually his slave?

"Is interest, then, natural and equitable? There is nothing in this illustration to show it to be. Evidently what Bastiat (and many others) assigns as the basis of interest, 'the power which exists in the tool to increase the productiveness of labor,' is neither in justice nor in fact the basis of interest. The fallacy which makes Bastiat's illustration pass as conclusive with those who do not stop to analyze it, as we have done, is that with the loan of the plane they associate the transfer of the increased productive power which a plane gives to labor. But this is really not involved. The essential thing which James loaned to William was not the increased

power which labor acquires from using planes. To suppose this, we should have to suppose that the making and using of planes was a trade secret or a patent right, when the illustration would become one of monopoly, not of capital. The essential thing which James loaned to William was not the privilege of applying his labor in a more effective way, but the use of the concrete result of ten days' labor. If 'the power which exists in tools to increase the productiveness of labor' were the cause of interest, then the rate of interest would increase with the march of invention. This is not so. Nor yet will I be expected to pay more interest if I borrow a fifty-dollar sewing machine than if I borrow fifty dollars' worth of needles; if I borrow a steam engine than if I borrow a pile of bricks of equal value. Capital, like wealth, is interchangeable. It is not one thing; it is anything to that value within the circle of exchange. Nor yet does the improvement of tools add to the reproductive power of capital; it adds to the productive power of labor.

"And I am inclined to think that if all wealth consisted of such things as planes, and all production was such as that of carpenters — that is to say, if wealth consisted but of the inert matter of the universe, and production of working up this inert matter into different shapes, that interest would be but the robbery of industry, and could not long exist. This is not to say that there would be no accumulation, for though the hope of increase is a motive for turning wealth into capital, it is not the motive, or, at least, not the main motive, for accumulating. Children will save their

pennies for Christmas; pirates will add to their buried treasure; Eastern princes will accumulate hoards of coin; and men like Stewart or Vanderbilt, having become once possessed of the passion of accumulating, would continue as long as they could to add to their millions, even though accumulation brought no increase. Nor yet is it to say that there would be no borrowing or lending, for this, to a large extent, would be prompted by mutual convenience. If William had a job of work to be immediately begun and James one that would not commence until ten days thereafter, there might be a mutual advantage in the loan of the plane, though no plank should be given.

"But all wealth is not of the nature of planes, or planks, or money, which has no reproductive power; nor is all production merely the turning into other forms of this inert matter of the universe. It is true that if I put away money, it will not increase. But suppose, instead, I put away wine. At the end of a year I will have an increased value, for the wine will have improved in quality. Or supposing that in a country adapted to them, I set out bees; at the end of a year I will have more swarms of bees, and the honey which they have made. Or, supposing, where there is a range, I turn out sheep, or hogs, or cattle; at the end of the year I will, upon the average, also have an increase.

"Now what gives the increase in these cases is something which, though it generally requires labor to utilize it, is yet distinct and separable from labor — the active power of nature; THE PRINCIPLE OF GROWTH, OF REPRODUCTION, WHICH EVERYWHERE

CHARACTERIZES ALL THE FORMS OF THAT MYSTERIOUS THING OR CONDITION WHICH WE CALL LIFE. AND IT SEEMS TO ME THAT IT IS THIS WHICH IS THE CAUSE OF INTEREST, OR THE INCREASE OF CAPITAL OVER AND ABOVE THAT DUE TO LABOR. There are, so to speak, in the movements which make up the everlasting flux of nature, certain vital currents, which will, if we use them, aid us, with a force independent of our own efforts, in turning matter into the forms we desire — that is to say, into wealth.

"While many things might be mentioned which, like money, or planes, or planks, or engines, or clothing, have no innate power of increase, yet other things are included in the terms wealth and capital which, like wine, will of themselves increase in quality up to a certain point; or, like bees or cattle, will of themselves increase in quantity; and certain other things, such as seeds, which, though the conditions which enable them to increase may not be maintained without labor, yet will, when these conditions are maintained, yield an increase, or give a return over and above that which is to be attributed to labor.

"Now the interchangeability of wealth necessarily involves an average between all the species of wealth of any special advantage which accrues from the possession of any particular species, for no one would keep capital in one form when it could be changed into a more advantageous form. No one, for instance, would grind wheat into flour and keep it on hand for the convenience of those who desire from time to time to ex-

change wheat or its equivalent for flour, unless he could by such exchange secure an increase equal to that which, all things considered, he could secure by planting his wheat. No one, if he could keep them, would exchange a flock of sheep now for their net weight in mutton to be returned next year; for by keeping the sheep he would not only have the same amount of mutton next year, but also the lambs and the fleeces. No one would dig an irrigating ditch, unless those who by its aid are enabled to utilize the reproductive forces of nature would give him such a portion of the increase they receive as to make his capital yield him as much as theirs. And so, in any circle of exchange, the power of increase which the reproductive or vital force of nature gives to some species of capital must average with all; and he who lends, or uses in exchange, money, or planes, or bricks, or clothing, is not deprived of the power to obtain an increase, any more than if he had lent or put to a reproductive use so much capital in a form capable of increase."

Between this theory and Turgot's the differences are only superficial. The part played by the natural fertility of the soil in Turgot's theory is taken in George's by the vital and reproductive forces of plants and animals. And both these theories differ only superficially from the productivity theory in its simplest and crudest form, according to which interest is accounted for by the utility of tools and labor-saving devices.

The "fructification theory," in the form it takes with George as well as in that it takes with Turgot, is revealed as utterly inadequate by the single question that reveals

also the inadequacy of the productivity theory: *Why can a cow, why can a young apple tree, why can a plow or a steam engine be bought at a price lower than the sum of the prices of all its future services?* If a cow or an apple tree or a plow could not be bought at such a price, no interest would accrue to its owner as its services came in with the passing of time; and that a cow or an apple tree or a plow can be bought thus is not accounted for in the least by the vital forces in animals or plants, by the fertility of the soil, or by the usefulness of tools. The only productivity in connection with animals or plants, or with the soil, or with tools, that is significant in connection with the interest problem is value-productivity, and the value-productivity of anything whatever is accounted for only by the discounting of future services by particular persons or groups of persons in order that the future services received, principal and interest together, shall equal *in value to those persons or groups of persons* the present services advanced.

The "Sacrifice Capitalistique"

§ 95. In his *L'Intérêt du Capital*,[1] M. Adolphe Landry explains, under the name of the "sacrifice capitalistique," a principle not previously suggested, so far as I know, by any economist, which he regards as accounting in part for the checking of advancing at such a point as to maintain a positive rate of interest. This principle is of special interest to me because I had hit upon it myself independently a few months before reading Landry's

[1] Paris, V. Giard & E. Brière, 1904.

book, and regarded it, at that time and for a while after I read Landry, as one of the important keys to the solution of the interest problem. The principle is explained by Landry briefly [1] as "*le fait que tout déplacement dans la consommation est préjudiciable, en tant qu'il rompt l'équilibre de la consommation, qu'il aggrave un défaut d'équilibre, ou qu'il remplace un défaut d'équilibre par un défaut d'équilibre inverse et plus marqué.*"

It is explained more fully as follows, on pp. 53–56 of the work cited. A translation follows.

"Nous arrivons maintenant à un cas nouveau, dont l'importance pratique est très grande: le cas où les besoins comme les ressources demeurent les mêmes à travers le temps. Dans ce cas encore la capitalisation ne pourra avoir lieu que si elle doit donner un rendement.

"Je suppose que mes ressources soient de 15,000 francs pour cette année et de 15,000 francs encore pour l'année prochaine, et que pour une consommation de 15,000 francs les derniers 100 francs dépensés doivent me procurer, cette année-ci, comme l'année prochaine, une utilité que j'estime à M. Il s'agit pour moi d'avancer 1000 francs pendant un an? Je me verrais contraint de réduire mon bien-être, cette année-ci, de $M + M' + M'' + \ldots$, et je me mettrais à même d'accroître mon bien-être, l'an prochain, de $M_1 + M_2 + M_3 + \ldots$. Or la loi de la décroissance de l'utilité qui veut que l'utilité d'une certaine quantité d'un bien soit d'autant plus faible qu'on possède déjà une plus grande quantité du bien en question, cette loi, *par cela même qu'elle s'applique à tous les autres biens,*

[1] Work cited, p. 145.

s'applique à ce bien d'une nature très particulière qu'est l'argent. Employant au mieux notre argent, nous nous procurons avec des sommes successives égales des satisfactions toujours plus faibles. On a donc

$$\ldots M'' > M' > M > M_1 > M_2 > M_3 \ldots,$$

et par suite

$$M + M' + M'' + \ldots > M_1 + M_2 + M_3 + \ldots$$

L'avance dont je parlais ne deviendra possible que si elle doit donner un rendement au moins égal à la différence

$$(M + M' + M'' + \ldots) - (M_1 + M_2 + M_3 + \ldots).$$

"S'il s'agissait d'avancer 2000 francs au lieu de 1000 francs, le rendement exigé serait plus que doublé; car à la série $M + M' + M'' + \ldots$ viendraient s'ajouter dix termes tous plus grands que les dix premiers, et à la série $M_1 + M_2 + M_3 + \ldots$ viendraient s'ajouter de même dix termes plus petits que les dix premiers. La somme à capitaliser augmentant, le rendement exigé subirait une augmentation, non pas proportionnelle, mais plus rapide. Ainsi la décroissance de l'utilité agit comme une sorte de frein qui arrête la capitalisation, et elle agit d'une manière toujours plus puissante pour une capitalisation plus forte.

"On voit le lien étroit qui rattache ensemble toutes les considérations qui viennent d'être développées. Toutes découlent d'un même principe, à savoir que la meilleure façon de distribuer sa consommation dans le temps est celle qui fait que les derniers besoins satisfaits ont la même importance à chaque moment du temps.

De ce principe, que j'appellerai le principe de l'équilibre de la consommation, les conséquences suivantes se déduisent :

"1°. la capitalisation ne coûte rien au capitaliste quand elle tend à établir l'équilibre de la consommation ;

"2°. la capitalisation coûte au capitaliste — et celui-ci, par suite, ne s'y décidera que moyennant l'assurance de percevoir un surplus — lorsqu'elle détruit l'équilibre de la consommation, ou qu'elle aggrave le défaut d'équilibre de cette consommation.

"Or, la capitalisation tend à établir l'équilibre de la consommation :

" (*a*) quand les besoins doivent croître ;

" (*b*) quand les ressources doivent diminuer.

"La capitalisation, d'autre part, détruit l'équilibre de la consommation, ou aggrave le défaut d'équilibre :

" (*a*) quand les besoins doivent diminuer ;

" (*b*) quand les ressources doivent croître ;

" (*c*) quand les besoins et les ressources doivent rester les mêmes.

"Si nous nous attachons uniquement aux facteurs qui s'opposent à la capitalisation, nous pourrons dire que ces facteurs se réduisent à un, puisque c'est toujours la loi de la décroissance de l'utilité qui, dans les cas énumérés ci-dessus, fait la 'rareté du capital,' empêche que les capitaux soient avancés à moins de l'assurance d'une plus-value. En un certain sens, cependant, nous sommes en droit de dire que nous avons trois causes : tantôt, en effet, c'est parce qu'une diminution des besoins empêche l'équilibre de la consommation que la capitalisation, aggravant ce défaut d'équilibre, est en elle-même fâ-

cheuse; tantôt c'est parce qu'il y a accroissement des ressources que la capitalisation est encore fâcheuse, et de la même manière; tantôt enfin, au lieu d'aggraver, la capitalisation crée le défaut d'équilibre de la consommation. Pour la commodité de l'exposition, je dirai désormais, parlant de ces trois causes: la diminution des besoins, l'accroissement des ressources et le sacrifice capitalistique."

Translation of the passage quoted from pp. 53–56 of Landry's *L'Intérêt du Capital:*—

"We come now to a new case, the practical importance of which is very great, the case in which wants as well as resources remain the same throughout the time. In this case also capitalization [1] can take place only if it is to yield a surplus.[2]

"Suppose that my resources are 15,000 francs for this year and 15,000 francs for next year also, and that in the case of a consumption of 15,000 francs the last 100 francs spent are to yield me, this year or next indifferently, a utility that I estimate as M. The question is whether I shall advance 1000 francs for a year. I should have to reduce my well-being [if I did advance the 1000 francs], this year, from $M + M' + M'' + \ldots$, and I should be in a position to increase my well-being, next year, from $M_1 + M_2 + M_3 + \ldots$ Now the law of diminishing utility, according to which the more one has of a good, the less is the value of a given quantity of it, — this law, precisely because it is applicable to all other goods, is applicable to that good, of quite special character,

[1] In the sense of advancing.

[2] Rendement.

which is called money. Using our money to the best advantage, we shall secure for ourselves, with successive equal sums, less and less returns of satisfaction. We have, then,

$$M'' > M' > M > M_1 > M_2 > M_3 \ldots$$

and hence

$$M + M' + M'' + \ldots > M_1 + M_2 + M_3 + \ldots$$

The advance of which I spoke will become possible only if it is to yield a surplus [1] at least equal to the difference

$$(M + M' + M'' + \ldots) - (M_1 + M_2 + M_3 + \ldots).$$

"If it were a question of advancing 2000 francs instead of 1000 francs, the surplus [2] exacted would have to be more than doubled; for to the series $M + M' + M'' + \ldots$ there would have to be added ten terms all greater than the first ten, and to the series $M_1 + M_2 + M_3 + \ldots$ there would have to be added ten terms all smaller than the first ten. As the sum to be capitalized [3] increased, the surplus exacted would have to increase not proportionally but acceleratively. Thus diminishing utility acts as a sort of check to capitalizing [4]; and the greater the capitalization, the more powerful its action.

"It is clear how closely bound together are the considerations that have just been developed. All follow from one principle, namely that the best way to dis-

[1] Rendement.
[2] Rendement.
[3] In the sense of advanced.
[4] In the sense of advancing.

tribute one's consumption through time is that which makes the last wants satisfied at each moment of the time have the same importance. From this principle, which I shall call the *principle of the equilibrium of the consumption*, the following conclusions may be deduced:

" 1st. *capitalizing* [advancing] *costs the capitalist* [capitalizer or advancer] *nothing when it tends to establish equilibrium of the consumption;*

" 2nd. *capitalizing* [advancing] *costs the capitalist* [capitalizer or advancer] *something* — and therefore he will decide upon it only in case he is sure of receiving a surplus thereby — *when it destroys the equilibrium of the consumption*, or when it aggravates a defect of the equilibrium of this consumption.

" But capitalizing [advancing] tends to establish the equilibrium of the consumption [1]:

" (*a*) when wants are to increase;

" (*b*) when resources are to decrease.

" Capitalizing [advancing], on the other hand, destroys the equilibrium of the consumption,[1] or aggravates a defect of equilibrium:

" (*a*) when wants are to decrease;

" (*b*) when resources are to increase;

" (*c*) when wants and resources are to remain the same.

" If we regard only the factors that check capitalizing [advancing], we can say that these factors may be reduced to one, since it is always the law of diminishing utility which, in the cases enumerated above, causes the 'scarcity of capital,' prevents the advancement of

[1] The word in the text is "capitalisation," evidently a misprint for "consommation."

capital except with the assurance of a surplus. In a certain sense, however, we are right in saying that we have three causes: sometimes, indeed, it is because a decrease of wants upsets the equilibrium of the consumption that capitalizing [in the sense of making advances], aggravating this defect of the equilibrium, is in itself disadvantageous; sometimes it is because there is an increase of resources that capitalizing is disadvantageous, and in the same way; sometimes, finally, *capitalizing, instead of aggravating, creates the defect of the equilibrium of the consumption.* For convenience I shall say henceforth, in speaking of these three causes, *the decrease of wants, the increase of resources, and the sacrifice of capitalizing* [*le sacrifice capitalistique*]."

§ 96. The principle which Landry thus explains under the name of the "sacrifice capitalistique" may well be explained again briefly in different words. Suppose a man whose wants are to remain the same next year as this year earns $500 this year and expects to earn the same next year. The question arises whether he shall invest $10 for one year. If he does so, he will have for consumption this year, aside from any interest that he may receive on the investment, $490; and for consumption next year, aside from interest, $510. This means that, aside from any benefit he may receive from interest, he is injured by the transaction to just the extent that the wants satisfied by the last $10 of $510 are less urgent than those that would have been satisfied by the last $10 of $500. The transaction involves his shifting the expenditure for consumption of $10 from a time when he has already spent only $490 in the year to a time when

he has already spent $500 in the year, and when, therefore, so far as the shifting is concerned, the next $10 is less urgently needed. To undertake the transaction, therefore, involves a sacrifice, the "sacrifice of capitalizing," the sacrifice caused by the very capitalizing itself, the "sacrifice capitalistique." Consequently, says Landry, a man will not normally undertake the transaction unless he is assured of a surplus for doing it, which surplus is interest or at least an element of interest. This principle, Landry believes, is constantly at work, no matter what the relations of want and provision at the two times in question; and its resultant effect is bound to be to help maintain a positive rate of interest.

§ 97. Now, plausible as this reasoning may seem at first, it is, if I am not mistaken, fallacious. It is quite true that the shifting of consumption involved in capitalizing may often require the sacrifice Landry points out. It may be admitted, indeed, for the sake of argument, that that shifting of consumption involves the sacrifice pointed out more often than not. But that by no means proves that this "sacrifice of capitalizing" is a cause of the persistence of a positive rate of interest. Why? Because a corresponding sacrifice is required, according to the very principle pointed out by Landry, by the shifting of consumption involved in decapitalizing what has once been capitalized. In other words, though capitalizing may often cost the capitalizer something, unless he gets a surplus through it, by distributing his consumable income unfavorably in time, yet decapitalizing costs the capitalizer something just as often, for the same reason; so that the resultant effect of the principle

would seem to be, not to reduce the total amount of advances to nature, but only to check capitalizing and decapitalizing equally. Just as it is a disadvantage, as Landry points out, for a man, for example, whose income and whose needs are constant to give up the consumption of $10 when he has spent but $490 in the year in order to have the consumption of the same $10 when he has spent $500 during the year, so it is a disadvantage also for the same man, after having once capitalized the $10, to give up the consumption of $.30 per year for $33\frac{1}{3}$ years — in each of which years the $.30 is in addition to a constant income of, say, $500 — in order to consume $510 the year he decapitalizes and only $500 for each of the $32\frac{1}{3}$ years thereafter.[1]

It seems to me that the principle pointed out by Landry has as much effect in keeping invested in advances to nature what is once invested there as it has in preventing them to begin with. And if that is true, the principle is not a cause of the persistence of interest.

The Monopoly Theory

§ 98. Some writers of the philosophical anarchist school, including Proudhon in France and Benjamin R. Tucker in the United States, have held a theory of interest which is fairly summed up, I think, in the following interpretation of it by a Philadelphian engaged in the banking business.

[1] Here I am considering only the principle pointed out by Landry. For other reasons, of course, which I have explained at length in the previous chapters, it may be of advantage to a man to exchange $.30 a year for $33\frac{1}{3}$ years for $10 at present.

§ 99. "The scientific thinkers of this school hold that, for all freely reproducible goods, value (and its equivalent price when the thing or good is expressed in terms of the adopted value unit) is, in a normal market, with absolute free competition, determined by both final utility and marginal cost. The term 'freely reproducible' embraces all that important and large class of staple goods and necessaries of life in which flexibility in supply exists, which are the rule and not the exception in a free market. While utility must be accepted as the principle which creates the desire and originates value, cost of production at the margin is 'what governs the quantity supplied and with it the value of things.' In the case of 'scarcity' goods (which are the exception and not the rule in a free market) such as old wine, oil paintings, etc., in which supply is fixed, value is determined by final utility. For the vast quantity and most important classes of goods, then, market price will, with free competition, tend always to settle at the cost of production at the margin. Supply will be adapted to demand.

"Although in the abstract and popular sense both are included in the term 'capital,' for clearness in exposition a distinction is made between capital-goods and money. We have consequently to treat separately of the profit on capital-goods and the interest on money, and to determine what it is that causes these persistent incomes, which are payments for impersonal services, to arise.

"Capital-goods are not only tools, machinery, buildings, and other aids to production, but also goods in

course of production; in short, they are the results of past labor utilized through present or future labor to produce consumable commodities; whereas money, 'which can never be used in the act of production, cannot be capital when that term is used in its *concrete* sense.'

"By money we mean that 'product of social compact,' or medium of exchange, which has been adopted by common consent as generally acceptable in overcoming the difficulties of simple barter. The mediating of exchanges is its chief function. Anything is money which fulfills those conditions. Gold as money has long since proved utterly inadequate to meet the growing demand for the medium of exchange necessary for the complex and tremendous scale on which modern industry is carried on, and credit money has been introduced, until today for every dollar of gold there is in circulation about eight dollars of credit money. This credit money consists of treasury notes, bank notes, bank credits circulating through checks, etc.

"Money is an absolutely indispensable factor in modern production and exchange. Without it a return to simple barter would be imperative, and our advanced form of civilization impossible. Consequently if the supply of money is insufficient, the competition for it will result in a premium, or interest, paid by borrowers for its use.

"The inadequate supply of money is due to restrictions imposed by law on the issue of money, which prevents the natural adaptation of supply to demand. This is true of all present kinds of money except gold,

the supply of which is restricted by nature. Among the several legal restrictions is the national tax of ten per cent on state bank issues.

"The recompense or interest on money loans is 'determined in the market by the same process which determines the value of other services.' By the limitation of supply, money is made, as it were, similar to 'scarcity' goods, the price of which is determined by the utility to the user, or by final utility. Thus a difference, called interest, constantly exists between the cost of issuing money (that is, of mint-stamping the gold, or preparing the credit notes, etc.) and the price which money commands in the market. We do not here refer to the cost, or the value, of the commodity gold, or the other commodities which secure the credit notes. If the supply were free from all restrictions (save those necessary for redemption and validity), supply would naturally tend to adapt itself to demand, as in the case of freely reproducible goods, the price of which is determined by cost of production at the margin.

"There is no valid reason why a greater extension of credit money could not readily and safely be introduced, secured, both primarily and secondarily, by deposit of wealth to insure redemption in the unit of value, which at present is gold. The value of this credit money, redemption assured, would correspond to the value of the gold and could not possibly fall below it, even were the volume largely increased. As the cost of issuing credit money will, under free competition, adjust itself to the labor of preparing the tokens and handling the loans, in other words as price will conform to cost, it

follows that the portion of pure interest now exacted for money loans by reason of the scarcity of money will be eliminated.

"At present only certain specified and limited kinds of wealth can legally be monetized, and the result is an inadequate supply of money and the rise of interest. To the holders of this privileged wealth the holders of all other kinds of wealth are obliged to pay tribute before they can enter the competitive market. The payment of interest is a tax levied by monopoly.

"As it is today, a bank is enabled by reason of the inadequate supply of money to collect pure interest (that is, that part of gross interest in excess of charges for labor and insurance) for a service which consists merely in exchanging its known and widely available credit notes, that have been endowed with the monetary privilege, for the equally good but unknown and unavailable credit notes of its customers which are not so endowed. In all business loans the customer, by pledge, either directly or indirectly, of wealth or capital, secures the bank, so that it is not capital which he borrows and for which he pays interest; nor is it capital which the bank lends and for which it obtains interest. The transaction is merely an exchange of one form of credit for another, the only difference being that the customer's credit, though equal in value to the bank's credit, 'is by law disqualified from being used as a medium of exchange.'

"In the case of unsecured loans payment is for risk, which is not interest but insurance; but where there is no risk there can, under free competition, be no exaction

of payment. There can be no benefit conferred where there is no burden borne.

"Capital goods, the agencies of production, are what men really want to get. But as money is essential for the transfer of these, the ability to obtain money at cost secured by their own property enables them to buy capital goods and thus avoid the necessity of borrowing them.

"Mr. B. R. Tucker, in one of his articles, propounds the following problem: —

"'A is a farmer owning a farm. He mortgages his farm to a bank for $1000, giving the bank a mortgage note for that sum and receiving in exchange the bank's notes for the same sum, which are secured by the mortgage. With the bank notes A buys farming tools of B. The next day B uses the notes to buy of C the materials used in the manufacture of tools. The day after C in turn pays them to D in exchange for something that he needs. At the end of the year, after a constant succession of exchanges, the notes are in the hands of Z, a dealer in farm produce. He pays them to A, who gives in return $1000 worth of farm products which he has raised during the year. Then A carries the notes to the bank, receives in exchange for them his mortgage note, and the bank cancels the mortgage. Now, in this whole circle of transactions has there been any lending of capital? If so, who was the lender? If not, who is entitled to any interest?'

§ 100. "Having determined the cause of interest on money loans, and how such interest may be eliminated, we now turn to the question of profits on capital goods.

"The question is (to use the words of another to whom the present writer is indebted for some views expressed herein, but whose name is purposely omitted): 'Why is it that the product obtained with the use of

capital exceeds the cost of production and thus affords an income for capital, or, in short, why does capital get a profit?'

"As has been stated, the value, or price, of freely reproducible goods is, in a free market, regulated by the cost of production at the margin. This necessarily results in the intra-marginal producer, whose cost is lower, reaping a profit. We are forced to the conclusion that this profit is due to an advantage which the intra-marginal producer possesses over the marginal producer. This advantage is due in turn to the interest which the marginal producer pays on money loans. The marginal producer, so far as money is concerned, is obliged to borrow money with which to obtain the capital-goods employed in production. The intra-marginal producer does not need to borrow. The producer, therefore, who is free from debt, or the intra-marginal producer, reaps a profit over the producer who is obliged to borrow, or the marginal producer, corresponding to the interest which the latter must pay on money loans equal to the capital which he employs. The rate of interest on money loans thus tends to govern the rate of capital-profit, is indeed the cause and not the effect of capital-profit. As Mr. Tucker says, 'The rate of interest on money fixes the rate of interest on all other capital the production of which is subject to competition, and when the former disappears the latter disappears with it.'

"Interest on money loans is paid by producers because of the special advantages which money affords as a medium of exchange. We have already noted, however, that money commands interest because of an inade-

quate supply, due to legal restrictions which keep the supply from adapting itself to the demand. Now, with these restrictions removed, all producers with property or credit will be able to obtain money without payment of interest, and all, therefore, will be equally at the margin so far as money is concerned. It follows that under free competition no persistent profit is possible. What may be called 'chance' profits may arise, but they are transitory and are, in the average, offset by 'chance' losses. The price of freely reproducible goods will tend to settle at the cost of production at the margin. Interest on money loans, being eliminated, can no longer be included as an element of cost in production, and thus cost at the margin will be merely a labor cost. Competition being free, final utility and marginal labor cost will become equal quantities. When interest vanishes, the entire product will be wages (omitting the question of rent).

"Capital is an aid to labor, and the self-interest of every producer induces the adoption of the capitalistic or indirect method of production because it yields a larger product. This is a great incentive for the saving and investing of capital. But with interest charges on money it is unprofitable to use more than a limited amount of capital, and consequently labor is only partially benefited and employed. Labor does not reach its maximum efficiency and the supply of capital is thereby limited. It is manifest that by an increase of capital labor's productivity will be enhanced and the net return to capital diminished. With interest on money eliminated, capital will be in more abundant

and cheaper supply, and, as a result, more capital will be profitably used, until all labor is employed at its maximum efficiency and the supply of capital in consequence is still further increased. This process will continue until gradually, under the force of free competition, the final efficiency of capital and the power of capital to return a net income reach the vanishing point.

"'If I were free,' says Mr. Tucker, 'to use my capital directly as a basis of credit or currency, the relief from the necessity of borrowing additional capital from others would decrease the borrowing demand, and therefore the rate of interest. And if, as the Anarchists claim, this freedom to use capital as a basis of credit should give an immense impetus to business and consequently cause an immense demand for labor and consequently increase productive power, and consequently augment the amount of capital, here another force would be exercised to lower the rate of interest and cause it to gradually vanish.'

"Capital is scarce and in inadequate supply because the processes of production and exchange are hampered by an arbitrary limitation of the medium of exchange. Free competition is interfered with and, as a consequence, supply is not adapted to demand. The prices of freely reproducible goods rule above labor cost of production at the margin, yielding to capital a persistent net return or interest. There is nothing to prevent this interest from falling to zero, provided the production and accumulation of capital are not discouraged.

"The conclusion is that interest arises not from economic exigencies, but from the monopoly of money created by arbitrary restrictions on the supply of money imposed by the state."

§ 101. This theory makes all interest dependent on loan interest, and accounts for loan interest by the scarcity of the supply of credit currency, owing to governmental restrictions.

Now, as I have shown throughout this book, natural interest is independent both of loan interest and of currency. In accounting, indeed, for natural interest, which I define as the price of advances to nature, I did not have occasion even to mention currency at all. Yet, strong as this is as evidence of the fallacy of the anarchists' reasoning, I will not rely on it only: I will try to point out some of the fallacies specifically.

§ 102. In his fifth paragraph my "extreme libertarian" opponent writes that "if the supply of money is insufficient, the competition for it will result in a premium, or interest, paid by borrowers for its use." Let us analyze this. "Money" may mean the standard of value, or the legal tender, or the medium of exchange, or any combination of these.

Now, whatever restricts or keeps down the supply of the standard of value makes each unit of that standard of value more valuable relatively to all other things. But what effect does that have on interest? If a dollar is very hard to come by, say as hard to come by as three bushels of potatoes, then of course it means three times as much to return a loan of a dollar as it would if a dollar were no harder to come by than one bushel of potatoes. But exactly the same is true of *lending* a dollar. Whether the supply of the dollar as standard of value is much restricted, either by nature or by law, therefore, has no more to do with the rate of interest

than has the difference between a larger loan and a smaller one.

What if by "money" we mean "legal tender"? Well, it is possible that a premium may be paid for the temporary use of what the law requires for the fulfilment of a contract made in terms of money. It is therefore true that the need of money to carry out contracts in accordance with the requirements of the law may occasionally add to the interest proper, which I have tried to account for in this book, an extra premium which in business circles is naturally called by the same name, "interest." But interest proper would persist, for the reasons I have pointed out, even if this occasional extra premium were done away with by enlightened legislation.

What if by money we mean the mere medium of exchange? What, in that case, is the effect of restricting the supply of money? Undoubtedly it is to increase the cost of production generally, for the medium of exchange is one of the most important of the labor-saving instruments of production. But that has no direct effect on the rate of interest. This is a puzzling point, requiring the most careful analysis. It is true, of course, that anything which increases the cost of production generally must on that account decrease the amount, as measured objectively, of the services men will advance to nature. And at first thought it must seem almost certain, according to my own theory as expressed in §§ 62 and 66, that whatever decreases the objective amount of the services advanced to nature must raise the rate of interest. But in that reasoning

there is a subtle error. Consider the meaning of Diagram IV (§ 61) once more. There the distance *LV* measured, not an amount of *objective services embodied in advances* (to nature), but an amount of *advances* (to nature). Advances (of any kind), however, are things of three dimensions or factors, as explained in §§ 30 and 31; it is only what decreases the *product* of two of those factors — the two whose product is the nominal value of the services that constitute the principal of the advance — that raises the rate of interest; and that product is not necessarily decreased by an increase of the general cost of production.

§ 103. I can now point out what seems to me the underlying error of the anarchist theory of the cause of the persistence of interest. The anarchist theory confuses the price of *money* with the price of an *advance* of money or goods or services. It is of an advance of money — or of other goods or services — that interest is the price. The anarchist argument quoted above does not concern itself at all, it will be noticed, with the price of advances: it concerns itself only with the price of money itself. The same criticism may be made of any other anarchist argument on interest that I know.

§ 104. Before passing from this anarchist theory of interest I should give due attention to Tucker's clever problem in the thirteenth paragraph of the banker's explanation. Whether that problem has ever been solved or not I do not know. But it is a fair problem, as well as a cleverly conceived one, and I shall try to solve it fairly.

Analyze the series of transactions. Beginning with

the first transaction and going through the series, which, we are told, occupied a year's time, we find that

A gives nothing (his note only) and gets "farming tools."
The bank gives nothing and gets nothing.
B gives "farming tools" (its notes only) and gets "materials."
C gives the equivalent of $1000 and gets the equivalent of $1000.
D gives the equivalent of $1000 and gets the equivalent of $1000.
Etc.
Etc.
Z gives $1000 and gets "farm products."
A gives "farm products" and gets nothing (the bank's notes only).
The bank gives nothing (A's note only) and gets nothing (its own notes only) *unless it gets interest.*

Note that in each of these transactions, except the first and the next to last, what occurs is merely the exchange of something for something else deemed equivalent. And note that the first and the next to last, taken together, amount simply to this, that A has the use throughout the year of goods, to the value of $1000, which he does not own till the end of the year.

Now Mr. Tucker asks whether in this whole circle of transactions there has been any lending of capital. Certainly there has. The person lent to is obvious enough: he is A. If there has been any lending, asks Tucker, "Who was the lender?" The lender is not obvious at all, but he is there just the same. For one day B is the lender, for one day C, and so forth: each man who accepts the bank-notes of $1000 in exchange for goods is a lender of goods to that value from the time he hands over the goods for the notes until the time that he hands over the notes to somebody else for other goods.

And now we come to Tucker's last question: "Who is entitled to any interest?" I reply that the people who are entitled to interest are all those who have done the lending or advancing, that is, everybody from B to Z and A. "Well, then," Mr. Tucker might reply, "if they are entitled to the interest, why do they go without it, and why does the bank get it?" I answer that they do not go without it, if they are good business men, except for the very short periods of time between the sale of goods for $1000 and the purchase of other goods for $1000, and that their motive for foregoing the interest for even so short a time is to secure instead the presumably greater advantage of making the exchange of one lot of goods for the other lot, in which exchange the bank-notes perform a useful service.

At this point in the argument Mr. Tucker would doubtless want to ask what right the bank has to appropriate the interest which has been earned, according to my view, by the many traders. The answer is not far to seek: the bank performs for the very traders who earn the interest in question, not only the service of substituting its notes for A's note so as to make A's credit available for use as currency by men who would not know whether A's note itself is good or not, but also various other services which the bank must perform in order to secure the patronage that makes possible its securing of the interest in question; and for these services all together the interest in question is just about reasonable payment. If it were more than reasonable payment, more and more persons would flock into the banking business, and more and more inducements would be offered by banks to the

public to secure their patronage, until the returns from banking would be just about what the same labor and capital could command in other enterprises. Thus it is arranged, as the result of laws and customs which, though faulty, no doubt, are nevertheless founded on the lessons of experience and not altogether bad, that the bank goes on performing the service in question and pays itself therefor with the interest which, as interest, is, accurately speaking, earned by the traders who are benefited by the bank's services. The reason why this arrangement works tolerably well is that the bank's services roughly correspond in value to the amount of interest it can appropriate in return for performing them. The arrangement is not perfect, but it is by no means so monstrous as the Anarchists think. It would be monstrous, of course, if the opportunity to engage in banking were not freely open on the same conditions to all reputable persons; but that is not the case.

§ 105. I can easily imagine the denunciations that will be uttered against me by some Anarchists and Socialists who disagree with me in regard to the whole problem of interest. To such persons let me say here that I am not, as they might suppose, hostile to their hopes and aspirations, but on the contrary very friendly: I differ from them simply in opinion, after striving, long and hard, to discover and to express the truth. And, after all, it is only by doing just that fearlessly that men can hope to get rid of their differences. For, violently as they may disagree as they struggle towards the truth, it is only on the truth itself that men can come to permanent agreement.

CHAPTER VIII

Interest in Relation to Wages and Rent

§ 106. We have seen that the indispensable condition of the nominal surplus called interest is the bearing of a cost by the advancer. Interest is just as truly earned, therefore, by the advancer who causes it by advancing services equitably belonging to him, as wages are earned by the hand-laborer or the brain-laborer.

But this is not saying, it should be noticed, that all the interest received by a Carnegie, a Rockefeller, or a Duke of Westminster is necessarily earned by the man who receives it. A great part of the capital of such men, though belonging to them legally, does not belong to them equitably. I mean that a great part of it came to them neither as gifts from those who equitably owned it, nor as the earnings of their own labor, nor as the earnings from their own advancing of what was equitably their own, but as income from privileges. By this word "privileges" I mean simply titles (to income) which, however honorably or however dishonorably acquired, — and in the case of some men of vast wealth they were acquired, so far as the individuals in question were concerned, honorably, — would not have gone to them if the laws and usages of society had been in accordance with the principles of justice as now conceived by the leading

economists. To put it more concretely, I mean by privileges such things as titles to the valuable services of land sites the value of whose services is due only infinitesimally to their owner and chiefly to the good citizens of the entire community; I mean such things as unearned exceptional advantages in the use of ores or oil that no man made, or in the use of railroad rights of way that the whole public contributed to set aside for common uses; and I mean by privileges such things as the power to charge buyers prices higher than they would have to pay if free to buy, without customs duty restrictions, of any seller they pleased.

With my meaning clearer, perhaps, now, I repeat that any one who causes the nominal surplus called interest by advancing services that belong to him not only legally but equitably, earns that interest as truly as a laborer earns his wages. And if this be true, interest and wages should be classed, from one point of view, as the coördinate kinds of the general class, earned income.

§ 107. We now have to consider the relation of interest to rent.

First, then, what do we mean by rent? The word "rent," besides being used in several senses in popular speech, has been used in several others in the writings of leading economists. For many years its accepted sense among economists—made famous by Ricardo—was that of income accruing to the owner of land in his capacity as owner merely, without labor on his part. Between Ricardo's time and ours the costlessness of the income accruing to landlords thus was strongly emphasized by

Mill, Henry George, and many other writers interested in the cause of social justice, and a tendency grew up to think of costlessness as the very essence of anything that is to go by the name of rent, and therefore to extend the use of the word to any costless income whatever. This tendency is deplored by Professor Fetter,[1] who considers that "the essential thought in rent . . . is that it is the value of the usufruct as distinguished from the value of the use-bearer or thing itself." [2] Which of these two meanings of the word deserves to prevail is a question on which I do not need to argue in the present inquiry. There is much to be said for the first, and doubtless there is something to be said for the second. It must be admitted that a brief name for all costless or unearned income is to be desired, and that the word "rent" is well fitted, by its long association with the unearned income from land, to serve in that capacity. On the other hand, doubtless the distinction made by Professor Fetter is of some importance; and the word "rent" is well fitted by its commonest non-scientific uses to serve in keeping that distinction clear. But for my present purpose, which is to analyze the difference between interest and rent, I shall assume that by rent is meant privileged or unearned income, whether from land or from any other source.

Taking rent in that sense, we find that interest, which from one point of view we classed as coördinate with wages as an earned income, is to be classed, from the same

[1] Chapter VIII of his *Principles of Economics*, The Century Co., N.Y., 1907.

[2] The same, p. 55.

point of view, as the antithesis of rent: whereas interest is an earned income, rent is an unearned.

§ 108. But there are other points of view from which interest should be compared with wages and rent. Wages are not dependent on any other sort of income, and they arise independently of laws and customs. Most rent is dependent on wages or interest, being in fact merely the wages of the public's labor and the interest from the public's investments to which inequitable laws and customs permit individuals to get title; the only rent, indeed, that can reasonably be said to be not dependent on wages or interest is the income arising from the outright gifts of nature; and all rent is the creature of laws and customs. All interest is dependent either on wages or on rent, that is, either on what the advancer has earned or on what, though he does advance it, he has not earned; but interest is like wages in that it appears and persists without the least help from laws.

§ 109. In connection with these distinctions it is interesting to recall the errors in respect to interest made by the Anarchists and the Marxians, and to point out an error made by many of the Single Taxers.

The Anarchists make the mistake of attacking, as the creature of government, "interest," whereas the abhorrent creature of government that they should attack is the quite different income that I am calling "rent."

The Marxians make the mistake of denying that any interest is earned by the advancer, whereas that interest which comes in to the advancer as the result of his advancing what he had really earned, his wages, is as truly earned by him as were the original wages themselves.

As for the Single Taxers, many of them, indeed all orthodox or out-and-out Single Taxers, make the mistake of confusing, under certain circumstances, the interest that they profess to have no objection to with the rent that they so zealously, and so effectively, attack. Consider a simple case. Here is Brown, let us say, who by labor has earned $1000. With the money he buys a lot of land from Smith, who bought it for $100 when the town it is in was but a frontier village. The next day the orthodox out-and-out Single Taxers have their way, let us suppose, and arrange for the public to take as a tax one hundred per cent of the rental value of the lot. They defend their action, before you pin them down to close reasoning, by saying, in effect, merely that the value of the use of the lot was created by the public, not by the owner, and that it is therefore right for the public to take that value for itself. But it is clear that the person who has got the benefit of all this value created by the public is not Brown at all, but Smith. For Smith has in his pocket the $1000 that represents the sum of all the future services of the lot, discounted at the current rate of interest; and nine tenths of that amount is to him rent, unearned income. And Brown, though he has title to all the future services of the lot, got their full present value by earning it.

The mistake of the out-and-out Single Taxers here consists in regarding Brown as a receiver of rent, in the sense in which I am using the word, merely because he receives an income derived immediately from land. Unless the lot appreciates in value after Brown acquires it, Brown receives from it no rent, in the sense of income

not earned by him, at all, and Smith and his predecessors have already received all of it. Except in so far as the lot may go on appreciating in value, therefore, *the horse has been stolen already*. The income Brown receives from the lot, if he receives no more than he paid for (that is, if the lot does not appreciate in value), is simply its services which he bought of Smith at their discounted present value. So far as he is concerned, therefore, his whole income from the lot in such a case is nothing but interest.

I am aware that orthodox Single Taxers seek to justify their program, when pressed by such arguments as these, by the plea that its benefits to the community will be so great and so widespread that even the Browns will on the whole be better off for it. Granting, for the sake of the argument at least, that this is true, it is not a sufficient defence of the program. The undoubted immediate injury to the Browns from the adoption of the full Single Tax program should be borne not by them only, but by the entire community; for it is the entire community that must be held responsible for the legal institutions which give the unearned income to the Smiths, whether they keep the titles to their lots or sell them, and which amount to a guaranteeing of those titles to the Browns who may buy them innocently with money truly earned.

"What," exclaim the orthodox Single Taxers, "you would *buy out* the present owners of land titles?" I certainly would. There is no organization in this country, so far as I know, that stands for this program. The orthodox Single Taxers, who might be expected

to favor, spurn it. And that the "practical" but relatively inequitable program of the orthodox Single Taxers will probably prevail over it I must admit. But it is the right program nevertheless. It is the right one, primarily, because it is the only one that accords with the highest justice we can conceive in the matter with our present knowledge. It is the right one, secondarily, because it is the least costly to society. All the land titles in this country can be bought "on the installment plan" by payments not exceeding the value, *above their present market prices*, of the titles to the public. And even if they could not be bought without the bearing of a positive economic burden by the community, they should be bought nevertheless; for there are other burdens besides economic burdens to be considered. How much did the Civil War cost this country, not only economically but vitally and morally, in comparison with the cost of buying the freedom of every slave?

CONCLUSION

§ 110. This completes the outline of my theory of interest. Some mistakes will doubtless be found in it; and even if found to be true in the main, it will be greatly developed by later writers. But it is as nearly true, and as complete in essentials, as I could make it without postponing its publication too long. I hope it will do good, especially in eliminating from party Socialism — much of the spirit and some of the tenets of which society should adopt — a grave economic error that threatens seriously to pervert it.

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